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[OFFICIAL NOTICE.]

Experience Section, Pacific Coast Gas Association.

OFFICE OF THE EXPERIENCE EDITOR,
ROOM 610, 445 SUTTER STREET,
SAN FRANCISCO, CAL., June 26, 1910.

To the Members of the Pacific Coast Gas Association: Someone has said that "Education is not the result of a course of study; it is the result of a course of experience." And the Editor of your Experience Department, whom you honored by that appointment at the last meeting, would like to have you share with him a bit of experience that has helped to make you successful, so that he can tell it to the Association at the Los Angeles meeting, which is so near at hand—September 20, 21 and 22. The name of the sender will be treated confidentially, if so desired. Faithfully yours,

LEON B. JONES, Editor.

BRIEFLY TOLD.

A DIFFERENCE, POSSIBLY.—The July number of the "Monthly Bulletin," of the National Commercial Gas Association contains an article purporting to describe a lighting installation at Altoona, Pa., in which appears the statement that 47 Reflex lamps, with glass reflectors, are employed to illuminate an area of 7,980 square feet. The "Illumination Editor" of the Association comments upon the installation, and in that comment declares that this type of equipment is what the gas men have to offer to secure the business against tungsten lamps. And, further, that an "Arc lamp consuming 20 cubic feet would be required to illuminate 1,000 square feet, or, if consuming 10 cubic feet per hour, 500 square feet, for equal consumption per square foot. The first would require a spacing of 32 feet between the outlets, and the second 22 feet, provided the distance between the counters and shelving was not less than these distances." This gentle, well-veiled put against gas arc lighting may seem clearer when one considers the fact that the Company with which the Illumination Editor is connected does not manufacture inverted gas arc lamps for interior lighting. While single units can undoubtedly be worked to advantage in small, irregularly-shaped rooms, their initial efficiency is so low and their cost of upkeep so marked as seemingly to put them out of the running when it comes to trying for the lighting of large areas. According to the literature which has been published the efficiency of a standard arc gas lamp (the Humphrey arc, if you will) is approximately 35 per cent. higher than these single units; and, further, the discrepancy in cost of maintenance is very marked. The Association would not in any sense detract from its usefulness were its leading comments passed upon by a committee not connected in any way or sense with any lamp company.—C. E.

DEATH OF MR. GEORGE CARELESS TREWBY.—The current issue (July 26th) of the "Journal of Gas Lighting" carries the fateful news of the death of Mr. George Careless Trewby, late Chief and Consulting Engineer of the Gas Light and Coke Company, of London, England, whose demise occurred the morning of July 18th, at his residence,

Fenton House, Hampstead Heath. Deceased was in his 72d year, and this succinct story of his useful life is reproduced from our contemporary:

Mr. Trewby entered the gas industry in 1853, when he became pupil of the late Mr. F. J. Evans, the then Chief Engineer of the Gas Light and Coke Company. His principal work was the supervision of the construction of a gasholder and tank, which were being erected at Page street, Westminster. He afterwards went to Constantinople to fill the position of Engineer to the Ottoman Government. On the termination of this engagement, he returned to England, and took charge of the Brentford Gas Works; but early in 1865 he again entered the service of the Gas Light and Coke Company, and was the Resident Engineer at the Horseferry Road station till 1870. He was that year transferred to Beckton, when the works which had been started there were only partly finished, and upon him devolved the duty of organizing the undertaking. Two years later came the memorable strike of stokers, every one of whom left the works. However, such was the firmness displayed by Mr. Trewby in those trying circumstances, that the men were completely beaten, and for 17 years afterwards the works were conducted in peace and quietness and were brought to a high state of perfection. In 1884 Mr. Trewby was appointed Constructing and Carbonizing Engineer of the Company, and he carried on the duties of this office with notable results till August, 1891, when a further change was made in his official designation—it being altered to Consulting and Constructing Engineer. From 1884, all extensions and reconstructions had been carried out under his supervision, and he introduced a large number of labor-saving appliances at the different works—the new pier at Beckton being one of his masterpieces. Its equipment includes powerful hydraulic cranes and grabs for unloading coal in the Thames, and transmitting it to wagons for conveying it to different parts of the establishment; and it speaks well for the installation that it has been copied by several other companies and firms for unloading their ships. The foregoing particulars will show the extensive character of Mr. Trewby's work for the company with whom his name was for so many years associated.

Mr. Trewby gave important evidence before the Departmental Committee appointed in 1898, and presided over by Lord Belper, to inquire into the manufacture and use of water gas in the Metropolis; also before the Powers of Charge Committee, presided over by Mr. Oldroyd, in 1900, and before Lord Rayleigh's Committee on Gas Testing in the Metropolis in 1904. He was one of the witnesses in the action brought by Messrs. Graham, Morton & Co. against the Compagnie L'Union des Gaz in connection with the Milan Gas Works contract. But since then he had lived a good deal in retirement.

Mr. Trewby joined the British Association of Gas Managers in 1870, and passed into the Gas Institute, of the Council, of which he eventually became a member. He was one of the Vice-Presidents for 1887–8. But, in association with a number of his colleagues, he severed his connection with the body, and actively assisted in the formation in 1891 of the original Institution of Gas Engineers, of which he was the first President. On the constitution of the present Institution in 1903, he became a member, and his name was on the roll at the time of his death. He was admitted as an associate member of the Institution of Civil Engineers in 1866, and was transferred to the active class of members in 1875.

The funeral took place at Hampstead Cemetery on July 24th; the interment being preceded by a service at Christ Church, Hampstead, where Mr. Trewby bad worshipped for 25 years, and of which at the time of his death he was Churchwarden for the third year in succession. He was a member of the Committee of the Mount Vernon Hospital for Consumptive, etc., and also of the Committee at Northwood, the Home for Sailors' Daughters, and many other bodies. He will consequently be greatly missed not only by his relations and friends, but by a large circle of acquaintances with whom he worked or came in contact. The death of Mr. Trewby will not dissociate the name from the gas industry, inasmuch as his son, Mr. Lawrie Trewby, is Engineer and Manager of the North Middlesex Gas Company.

CURRENT MENTION.—

Mr. J. M. Berkly, Engineer of the San Joaquin (Cal.) Light and Power Company, writing under date of July 29th, says: As a news item I have to inform you that the San Joaquin Light and Power Company, a subsidiary of the Pacific Light and Power Company, which corporation also owns the Domestic Gas Company, has taken over the properties of the Power, Transit and Light Company, of Bakersfield, which properties consist of electric light, railway and gas works. The same concern has also purchased the gas and electric ends at Merced, Cal. The Company is now building 80 miles of high tension electric lines to bring power from Crane Valley to Bakersfield, and will also build a complete new gas works in a new location. They, the parties in interest, say this works will be completed within 6 months; and they mean it, too.

After 16 years of active managerial work in the gas business, first with the Spokane Falls (Wash.) Company, and until recently with the Tacoma (Wash.) Company, our clever engineer and good friend, Mr. W. A. Aldrich, has been appointed Engineer-of-Construction in connection with the building of a coal gas works in Guadalajara, Mexico. The project is being financed by a San Francisco syndicate, headed by Mr. W. F. Boardman, well-known from his active connection with several Coast gas and electric lighting companies. The Guadalajara plant, which has been planned altogether by Mr. Aldrich, will be up-to-date in every respect. The retort house will have a stage floor, and every piece of moving machinery will be in duplicate. The retort house firing plans call for ¾-depth benches, with ½-depth recuperators. The system will be strictly on the high pressure order, and the preliminaries call for 30 miles of mains—the streets are all of the asphalt paved type. In addition to his duties as Engineer-in-Charge, Mr. Aldrich proposes to organize an educational force for the purpose of carrying on an instructional bureau; and in this he would seem to have quite a task on his powers, for the residents of the district have used charcoal only for fuel since the records of the place can be traced—and the records go back to the 15th century. It is a beautiful city so far as location, natu ral situation and the like are concerned, and it houses 140,000 people. Mr. Aldrich promises to send word about the progress made from time to time.

Mr. James L. Richards, President of the Massach usetts Gas Companies, has been elected a Director of the Boston Elevated Railway Company.

For the quarter ended June 30th last, the gross earnings of the Providence (R. I.) Gas Company totalled $251,272.29, or an increase over the corresponding quarter of 1909, amounting virtually to $20,000. The tax on royalty account paid into the city treasury amounted to $7,538.17.

We understand that Mr. E. W. Gilbert, who has been connected witn the Manchester (N. H.) Gas Company since 1908, will go to Charlestown, S. C., there to take charge of the reconstruction that will be required on the plants recently taken over by the U. G. I. Company. He certainly will have enough to do in that connection. However, it will not have been the first time that he successfully emerged from a like ordeal.

We are indebted to "M. T. R." for this narrative, which comes to us by way of Peoria, Ills., under date of August first: "Mr. W. H. Brown, the retiring Secretary of the Peoria (Ills.) Gas and Electric Company, who has resigned that position to assume the management of a gas light and power plant at Grand Forks, N. D., was pleasantly surprised in his office the afternoon of July 28th. At that hour the employees of the Company looked up inquiringly when representative Thomas N. Gorman, who has been connected with the Company for many years, stepped forward and, in a particularly happy and eloquent manner, presented Mr. Brown, on behalf of the employees, with a handsome traveling bag and a fine toilet set. The recipient responded appropriately, although deeply affected by the incident. The late Secretary has been connected with the Company, which owns the Peoria plant, in an official capacity for some years. Previous to coming to Peoria he was for some years in Springfield. He is a capable and efficient executive and the Grand Forks Company has made a desirable acquisition. Peoria takes leave of him with regret. He has been succeeded temporarily by Edward Gorken."

The cuts used last week in Mr. Jno. T. Faig's article on utilizing waste heat from gas engine plants, were originally from the columns of "Engineering News." This likely accounts for their indistinctness.

Mr. Wm. J. A. Bailey, who recently returned from a successful trip around the world representing a number of American manufacturers, is preparing another business tour. He expects to leave this country early in the Fall, and will be gone about a year, visiting the leading commercial centers of the world. Mr. Bailey markets his lines in conjunction with permanent sales' offices in the different countries, so that this trip would no doubt be of interest to manufacturers seeking foreign trade. His address is 32 Broadway, New York city.

[Official Rep rt.]

SIXTH ANNUAL MEETING, IOWA DISTRICT GAS ASSOCIATION.

Held at Sioux City, Iowa—June 15-17, 1910.

Wednesday, June 15.—Morning Session.

The Association was called to order at 10 A.M, Wednesday, June 15, by the President, Mr. George H. Waring. The following members answered to

ROLL CALL.

C. Asendorf	G. S. Forest	L. B. Mettler
B. C. Adams	C. W. Fair	H. B. Maynard
W. B. Ash	J. C. Grey	A. Mason
A. Burt	G. A. Green	O. B. Mathews
A. W. Borden	H. L. Griffin	G. K. Mead
W. J. Bertke	C. H. Grimm	H. A. Nash
E. D. Brown	J. Haines	J. J. Newitt
G. S. Carson	L. C. Heavenor	J. F. Potter
E. D. Clary	H. A. Hoskins	J. F. Parker
C. N. Chubb	T. B. Hopper	R. M. Parker
G. W. Clabaugh	O. Houck	R. K. Runner
T. Crawford	W. P. Hutchinson	H. D. Schall
F. L. Clisby	W. W. Haskell	A. L. Smyley
C. E. Crain	R. M. Hess	R. Shacklette
E. Crady	H. G. Haff	E. W. Steinmueller
H. A. Crow	G. M. Johnson	J. P. Smith
W. F. Clauson	L. L. Kellogg	H. S. Stevenson
F. G. Curfman	N. G. Leaky	C. Smith
C. C. Dunkle	W. H. Lyon	C. I. Tenney
J. B. Douglas	G. F. Lamb	D. C. Tenny
A. L. English	G. McLean	G. H. Waring

The President—The sixth annual convention of the Iowa District Gas Association will now come to order. I am sorry to say, as our Secretary is absent on account of illness, that it will be necessary to elect a temporary successor. Nominations are now in order.

Electing a Secretary Pro Tem.

On motion, Mr. Burt nominated Mr. Campbell W. Fair, which nomination was seconded, and the nominee was subsequently declared electcd.

On motion of Mr. Burt the reading of the minutes was dispensed with, and the President introduced the Hon. Mr. Smith, Mayor of Sioux City, who thus addressed the members:

Address of Welcome.

Mr. President and Members of the Iowa District Gas Association: It is difficult for me to address a gathering of this kind, for there is such a wealth of gags and merry quips and jests about the gas business that it is hard to avoid them. I understand by your programme that you have come here to listen to interesting and profitable papers, consequently I know you don't want to hear this bunch of gags that have been sprung on you for years in your business—I suppose the first gag was sprung about the time the meter was invented. At any rate, you have heard them all so many times that you can just consider that I have said them.

It gives me great pleasure, on behalf of the people of Sioux City, to welcome you here as delegates from three States adjacent to Iowa, and it gives me particular pleasure to do so on account of the Manager of our local Gas Company. He has been with us—I don't know how long, because I have only been here 22 years myself—and he was here when I came; consequently I think he is the only one we ever had. I never heard of any other, although the oldest inhabitants may know of someone. Sioux City has gone through the experience of a boom. It has been punctured and reinflated, and now it is coming up again pretty well. We have had many men who have done something for the city, and have brought conventions here to advertise it, and always in the forefront of these movements were Mr. Kellogg and his Company. I would say this about Mr. Kellogg, even if he was not one of my warmest personal friends: That he has always been one of our foremost citizens, on which account we feel particularly grateful to him for anything that he brings here, either in his own or any other business.

I will not detain you longer from your work, as I know you have a great deal to do. On behalf of the city we tender you a very hearty welcome. We know that during your stay here it is not necessary to assure you that anything you do will be all right. We are now under the commission form of government, and the man who has charge of the department of public safety, including the police and fire department, is out of the city. Under the law I take his place, and if any of you get into trouble, all you have to do is to send for Mr. Kellogg or me.

Response of Mr. Clabaugh.

The President asked Mr. G. W. Clabaugh to respond to the address of welcome, which he did as follows:

Mr. Clabaugh—Mr. Chairman and Your Honor, I at first thought this might be a very difficult proposition, but His Honor has made it particularly easy by his most cordial welcome, and through his eulogy of one of our best and dearest members, Mr. Kellogg. How Mr Kellogg has done it I do not know. I have been in Omaha for over 20 years, and I know of nothing that would give me more pleasure than to have our Mayor say that he always found me the true goods. We know this is true of Mr. Kellogg, for His Honor spoke from the heart, and did not say these things because he is the Mayor of Sioux City. Your Honor, you have by your welcome made it a great pleasure for us to be here. We know the welcome is genuine, for it rings true. You all are fortunate to live here in this handsome city, surrounded by some of the most beautiful country I ever saw. This is my first visit here, and yesterday, out on the golf field, as I looked over the country, I thought how many beautiful sites there were and new structures that are sure to be erected in the years to come. And what a city Sioux City will be under the administration of a man who is absolutely fair to the corporations! If all of our municipalities would only look on the fair, straight, right side of the utility corporation, how few our troubles would be? They would in fact be obliterated. We might get on the housetops and declare our honesty of purpose toward our consumers—the people from whom we expect our returns—and yet they would say as the Mayor did. I would like, though, to correct the Mayor on one point. He said he would give us some tips. Your Honor, tips have past and gone, and one improvement in the gas business of to-day is that we do not ask our consumers to use "tips." Why? Because they burn from 5 to 10 cubic feet an hour, and instead we give them four times the light with the incandescent burner. Therefore we are looking out for our consumers, and in doing that (I will be honest) we are looking out for ourselves, for we know that a satisfied consumer is the very best business prospect that we can possibly have. But I am not going into all this. You know that we try to do those things that we ought to do and we don't want to leave undone those things that we ought to do; but I will say to you that it is the purpose of every utility corporation in the country to-day to get nearer to the people and to the municipalities; and in my judgment you in your government in Sioux City, and other cities of Iowa, have struck the keynote; and it will be merely a matter of time when we will have those men who can be honest and fair; and in being so will do unto others as they would have them do unto them.

Report of the Council.

The next order of business was the report of the Council, which Secretary Fair read.

A Council meeting of the Iowa District Gas Assocciation was held in Omaha, Neb., February 25th. The following members were in attendance: Messrs. Waring, Crawford, Fair, Clabaugh, Vincent, Burt, Blackwell, Kidder, Adams.

Mr. Kellogg, of Sioux City, was present, by invitation of the Council, representing Sioux City, the next place of meeting.

Mr. Waring, of Omaha, as President of the Association, acted as Chairman of the Council. The following Finance Committee was appointed: Messrs. Austin Burt (Chairman), Campbell W. Fair and H. C. Blackwell.

After a discussion of ways and means of printing the proceedings of the Association, the following motion was made and adopted:

That a committee of two be appointed (with the Secretary as Chairman) to proceed to solicit advertisements to defray the expenses of publishing the proceedings for the first five annual meetings.

That $25 per annum be allowed for expenses for an assistant to the Secretary in preparing manuscripts, etc.

Mr. Thos. A. Crawford was appointed second member of the Committee.

The following Committee on Arrangements was appointed: Messrs. L. L. Kellogg (Chairman), Geo. D. Roper and Elmer Crady.

A motion was carried to divide the programme into five general outlines. These are given below.

A motion was made and carried to have three prepared discussions for each paper.

A motion was made and carried to appoint a Committee of Three,

from the Council and past Officers, to edit all papers before presentation to the Association. This Committee was appointed as follows: Messrs. L. L. Kellogg (Chairman), Jansen Haines and Geo. McLean.

It was decided to hold the next Annual Meeting at Sioux City on June 15, 16 and 17, with headquarters at Hotel West.

It was determined that the President should appoint a member to reply to the address of welcome.

It was ordered that Mr. G. W. Clabaugh be appointed a Committee of One to draft resolutions on the death of Mr. A. T. Averill; same to be forwarded to the Secretary and by him transmitted to the family. The following papers were selected and assigned; these papers and reports are being divided into groups as outlined above:

Accounting and General.—Report of Committee on Uniform System of Accounts. Paper on "Depreciation," by Mr. R. Shacklette, Detroit, Mich.; paper on "The Gas Company's Policy Toward the Public," by Mr. Campbell W. Fair.

New Business.—Report of Standing Committee on New Business. Paper on "How We Increased Gas Sales in Lincoln," by Mr. J. R. Shuff.

Gas Works Construction.—Report of Standing Committee on Gas Works Construction. Paper on "Purification of Gas; Construction and Operation," by Mr. Henry I. Lea, Chicago.

Gas Manufacture.—Report of Standing Committee on Gas Manufacture. Paper on "Boiler Fuel Leaks," by Mr. J. B. Myers, Omaha Neb.; paper on "A B C of Calorimetry," by Mr. J. B. Klumpp, Philadelphia, Pa.

Distribution.—Report of Standing Committee on Distribution. Paper on "Advantages of High Pressure in a Low Pressure System," by Mr. B. C. Adams, Lincoln, Neb.; paper on "Distribution in a Small Gas Plant." (Special Reference to General Operation, Street Leakage, Station Meter, etc.), by Mr. A. W. Borden, Hastings, Neb.

The Council decided to endeavor to secure a lecture by Mr. Rufus C. Dawes; also a lecture by Norman Macbeth on "Illuminating Engineering," these gentlemen to be invited by the President.

Council adjourned, to meet in Sioux City, Tuesday evening, June 14.

G. I. VINCENT, Secretary and Treasurer.

The Council of the Iowa District Gas Association met at the Hotel West, Sioux City, June 14, 1910, at 9 A.M. The following members were in attendance: Messrs. Waring, Clabaugh, Burt and Fair, President Waring in the Chair, and Mr. Fair acted as Secretary *pro tem.*

The minutes of previous meeting were read and approved, and the following applications for membership were read and approved:

Bell, C. H., Yankton, S. D.	Jones, J. P., Cedar Falls, Ia.
Bestor, F. C., Minneapolis, Minn.	Mathews, O. B., Grinnell, Ia.
Donolan, J. J., Waverly, Ia.	Mead, G. K., Blair, Neb.
Douglas, J. B., Philadelphia, Pa.	Newitt, J. J., Beatrice, Neb.
Grow, H. A., Sioux Falls, S. D.	Ransom, J. W., Norfolk, Neb.
Heavenor, L. C., Sioux Falls, S.D.	Royce, W. P., Sioux City, Ia.
Hess, R. M, Nebraska City, Neb.	Runner, R. K., Charles City, Ia.
Hopper, T. B., Des Moines, Ia.	Shuff, J. E., Lincoln, Neb.
Hoskins, H. A., Sioux City, Ia.	Smith, C., Dell Rapids, S. D.
Johnson, G. M., Omaha, Neb.	Steinmueller, E. W., Chicago, Ills.

Necrology.—The following members have died since the last meeting: A. T. Averill, President Cedar Rapids (Ia.) Gas Light Company; Joseph Stirinsky, Foreman Key City Gas Company, Dubuque, Ia.

The resignations of the following members were accepted: L. F. Blyler, Minneapolis (Minn.) Gas Company; R.W. Cunningham, Des Moines (Ia.) Gas Company; S. W. Cheney, Lincoln (Neb.) Gas and Electric Company; C. H. Frisch, St. Louls, Mo.; Joseph Goodbarn, Des Moines (Ia.) Gas Company; H. L. Olds, Detroit, Mich.; J. C. Tarr, Omaha (Neb.) Gas Company; J. K. Stewart, Citizens Gas and Electric Company, Waterloo, Ia.; R. S. Redman, Newton, Ia.

One member was dropped for non-payment of dues.

Transferred from Associate to Active Membership.—C. F. Patterson and Albert Clabaugh.

The following Nominating Committee was appointed: Messrs. L. L. Kellogg, Chairman; H. B. Maynard and J. C. Grey.

CAMPBELL W. FAIR, Sec. *pro tem.*

The report was approved.

The President—I don't know whether that carries with it the election of members, but I presume it does. It has been the custom, however, to elect these members by ballot and, if there are no objections, a motion will be in order to instruct the Secretary to cast the ballot.

Upon motion, duly seconded, the Secretary was instructed to cast the unanimous ballot of the Association for the persons named as active and associate members respectively, and the ballot was thereupon duly cast by him in accordance with said action.

The Secretary—One of the gentlemen just elected to membership is Mr. Thomas B. Hopper, of the Des Moines Gas Company. Mr. Hopper has assisted Mr. Vincent in his work as Secretary of this Association and is familiar with the details of the office. I beg to withdraw as temporary Secretary and would suggest that Mr. Hopper be chosen to fill this position until Mr. Vincent, restored to health, is with us once more.

The President—Gentlemen, you have heard the reasons specified for Mr. Fair's resignation. A motion will be in order to accept his resignation.

On motion of Mr. Clabaugh, duly seconded, Mr. Hopper was chosen Secretary *pro tem.* The

REPORT OF THE SECRETARY

was then read, as follows:

Your Secretary has written personal letters to all the unaffiliated companies in Iowa, and the return from these was not particularly satisfactory. Charles City, Waverly and Grinnell responded. But there are still left to be represented Fairfield, Ft. Madison, Hampton, Knoxville, Mt. Pleasant, Nevada, Osceola and Perry. Several applications have been received from Nebraska and South Dakota unaffiliated towns, and we seem gradually to be getting a complete representation.

Your Secretary has sent personal letters to the officers, and through them the members of all the gas associations, inviting them to this meeting.

Your Secretary begs to report that the file of digests of all technical articles prepared by the American Gas Institute is kept in the Secretary's office and is accessible to all members. These articles are thoroughly up to date and represent the last word in the gas and electrical industries.

During the year 2 members have died, 19 applications for membership and 9 resignations were received. One name was dropped by action of the Council. The total membership is now 98 active, 48 associate and 1 honorary.

THE REPORT OF THE TREASURER

showed a receipt of $686.22, an expenditure of $309.39 and a balance of $376.83, to date of January 14.

Upon motion of Mr. Clabaugh the report was accepted, as was also a statement from the Finance Committee, Mr. Burt, Chairman.

The President thereupon called Vice-President Burt to the Chair and then read his

ANNUAL ADDRESS.

It is with great satisfaction, as well as with much pleasure, that I have the honor of greeting you here in Sioux City at this our sixth annual convention. We meet this year in a progressive city in the center of our district and accessible to all sections, and I think the attendance shows that onr selection has been well made.

The object of these meetings is business during the hours of session, and social enjoyment and good fellowship during the hours when the meeting is not in session. As our programme is full, it will be necessary for us to begin promptly at each session, and I trust you wil cooperate with me to the extent of being present when the session begins.

It has been the custom in like associations for the President in his address to review the progress of the industry in the past year. As your Council has appointed Committees on New Business, Gas Works Construction, Gas Manufacture, Distribution and Uniform System of Accounts, these Committees will relieve me of this duty. Your Council, however, failed to appoint a Committee on Public Relations. I think such a Committee should be appointed and great care be exercised in the selection of its members.

The State Public Service Commission idea has not taken hold in this district, as the legislatures of Iowa, Nebraska and South Dakota, as well as those of 13 other States, failed to pass the bills to create State Commissions. I am of the belief, however, that sooner or later we will have a State Commission in one or more of our States in this district. I see no serious objection to a State Commission, provided that this Commission is composed of such men as we find on the Massachusetts Board of Gas and Electric Light Commissioners. That Board has served for ¼ of a century with satisfaction to the public and to the corporations in that State. The New York State Public Service Commission, while very much younger, has not met with the same uniform success, as will be seen by a decision December 7th,

1909, of the New York State Court of Appeals, for the Third Department, in the Case of the Delaware and Hudson Railway Company versus the up-State Public Service Commission. The case involved the permission to issue bonds to pay up the Company's indebtedness on property purchased before the Commission came into existence. The proposed bonds were covered by other property, which the Commission objected to and the Court held that this was a matter of business judgment to be decided by the directors or stockholders of the corporation, and not within the power of the Commission.

The Wisconsin Commission is a very good Commission that started out right by taking the corporations as well as the public into their confidence. The result being that most of their requirements are equitable and other commissions would do well to study these requirements. In my judgment we should not oppose the State commission movement, but rather meet it half way, and give the legislators the benefit of our knowledge without reserve, either as individuals or as an Association, through our Committee on Public Relations.

This Association is affiliated with the American Gas Institute, and, as you know, we have one Director on the Board to represent this Association. We have undertaken some original work for the Institute through our Committee on Uniform System of Accounts. This Committee will submit a report to you at this meeting.

There is a young, but large, Association that commands your attention, viz., the National Commercial Gas Association. This Association has a field of its own, as well as has the Institute, but I believe there should be an amalgamation or some working understanding between the two Associations so that they can arrange to have both meetings in the same city at the same time, or the meeting of one immediately following the meeting of the other. In this way gas managers could attend both conventions with a great saving of time and expense. I, therefore, suggest that this Association take some action which will express our views along this line.

There is still another National Association to which I wish to call your attention. That is the Illuminating Engineering Society. As this Society is composed of electric men as well as gas men, amalgamation would not apply. This Society is doing a great work, and if we expect to keep our share of the lighting business we must give some attention to the study of illuminating engineering. The electric man is taking advantage of this knowledge in order to bring his more expensive light in closer competition with gas lighting. We will have a lecture on this subject at this meeting, which I am sure will be of interest to you.

During the past year death has been a visitor among us and has removed two of our members:

A. T. Averill; died Feb. 14, 1910.
Joseph Stirinsky; died March 1, 1910.

Mr. Averill was one of our most prominent and respected active members and most of us know him personally. He was President of the Cedar Rapids Gas Light Company and President of this Association at our last meeting. Mr. Stirinsky, who was an Associate member of this Association, was foreman of the Key City Gas Company, of Dubuque, and was highly respected by all who knew him.

Let us pause a moment as a tribute to the memory of these men.

Before closing I wish to thank every member of the Council, the various committees, the members who have prepared papers, and particularly our energetic Secretary for the work done in the preparation for this meeting.

The programme which will follow represents the many suggestions of the members as boiled down by the Council in order to cover as much ground as possible in the three days given us. I trust that every member will feel that it is his duty to speak on every subject where he can add some information and not to hesitate to ask questions whenever he feels so inclined. Gentlemen, the meeting is now in your hands.

COMMITTEE ON PRESIDENT'S ADDRESS.

The Chair—It is customary for the Chair to appoint a committee of three on the President's address, the report to be made some time before adjournment Friday. I believe it would be fitting to appoint (and I so do) the past-Presidents of the Association, Messrs. Kellogg, McLean and Haines.

The President (resuming the Chair)—The next order being reports of committees, we will hear from the Committee on New Business.

THE REPORT OF THE COMMITTEE ON NEW BUSINESS

was then presented by Mr. J. C. Grey, its Chairman:

To the Iowa District Gas Association, Gentlemen—Your Committee appointed to prepare a report on the progress of new business during the past year begs to report as follows:

We wish to call attention to the good work that is being done, along the line of advertising and publicity, by the National Commercial Gas Association. Its efforts in bringing together the gas man, the appliance manufacturer and the public are steps in the right direction, sure to bring results that will be beneficial to all parties concerned. It goes further in publishing a "Bulletin" of points of interest and new ideas, which Bulletins are sent to all members. This keeps the members in touch with one another by putting the results of the experiments of one directly before his brother member. Certain companies are organizing local sections among their employees, which action tends to bring the members of different departments nearer together.

Gas appliance manufacturers are advertising more and more in the standard magazines of to-day, and it is quite common to see a gas lamp, a water heater or range displayed in a full page advertisement.

The closer relationship that is being established between the appliance man and the gas man is resulting in a vast improvement in the appliances that are being made. Formerly we bought an appliance as it was built, and no changes were made; but now a suggestion here and there, from the man who places the appliance and stands behind it, has improved conditions a great deal. Stoves are being built to satisfy the most critical purchaser, while improved gas lamps are making it possible for the gas man to get his share of the lighting business.

The sale of gas for industrial fuel, though not a new feature, is being developed more and more. The gas man is awakening to the fact that one consumer of gas for industrial purposes does not require a much larger investment for service, meter, complaint and clerical work, for a gas consumption varying from 500,000 to 5,000,000 cubic feet per year, than one using 20,000 on a gas range. This work, of course, is progressing slowly, for it requires specially trained men; but it offers the greatest possibilities for increased gas sales to-day.

The advent of the gas illuminating engineer has added greatly to the possibilities for placing gas lighting installations in large propositions. The rooms or buildings can be measured and sketches made, showing the exact location of the lights and the foot-candles of illumination that will be delivered at any or all points in the rooms. This scientific method carries a great deal of weight and inspires confidence. When this procedure is followed the prospective consumer must feel that we are endeavoring to give him the maximum returns for his money. Our electric competitor has been doing this work for some time to advantage, and we must follow if we expect to get our proportionate share of the large installations.

The results that have been obtained, by the use of the card index and follow-up systems in the operation of a new business department in the past year, have more than demonstrated that a record of this kind is of inestimable value. It serves as a check on the soliciting force, as well as giving an office record of our consumers, that could be obtained in no other way without the expenditure of considerable money. More attention is being paid to our offices and displays. Formerly the idea seemed to prevail that a window at which to pay gas bills and a back room for the bookkeepers were all that was necessary; but this is all changed. New and up-to-date offices are replacing the old ones, and well put together displays are arranged to attract the eye of all visitors, which good work shows that we are making rapid strides for the betterment of conditions in the gas business as a whole.

J. C. GREY,
H. W. POTTER,
H. C. L. BLACKWELL, } Committee.

Upon motion, the report was accepted, and the report of the Committee on Construction was then read.

REPORT OF THE COMMITTEE ON CONSTRUCTION.

SIOUX CITY, June 11, 1910.

Iowa District Gas Association, Gentlemen: The Committee on Construction has nothing of consequence or importance to report. There has been nothing unusual in the line of construction that has come to the attention of your Committee. Whatever has been accomplished in this direction has appeared, from time-to-time, in the JOURNALS, but it is our opinion that nothing out of the regular and usual order of things, in the matter of construction, has actually been produced.

Your Committee regrets that it cannot contribute a more interesting

report; but, in casting about over the field, it failed to find anything of great importance. Respectfully submitted,

HENRY I. LEA.
EDWARD G. PRATT,
THOMAS CRAWFORD,
} Commiitee.

The President—If there are no objections, the report will be placed on file. Next is the report of the Committee on

PROGRESS IN GAS MANUFACTURE THE PAST YEAR,

which was then read by the Secretary.

The manufacture of gas, being such an old and established industry, it is but natural that the progress made during a single year would not show many decided permanent changes or improvements. It is true, however, that many interesting processes and developments have been advanced, but it remains to be seen whether such processes and developments are to be of a permanent value.

The Universities of this country, especially of the Middle-West, have taken special interest in the study of gas engineering, in that in three of the larger Universities' courses in that subject are now available. There are now similar courses in the Technical Schools at Cologne, Carlsruhe and other European cities, while in England there has been endowed the Livesey Professorship of Gas Engineering, University of Leeds.

Experimental plants have been established in this country and abroad where various methods incidental to the manufacture of gas are being experimented upon. In Germany one of these plants has been more than self-supporting and has been very useful in testing out various gas coals. The experience gained by such experiments, carried on in a practical manner, should eventually result in many improvements and methods of economy.

Great progress has been made, especially abroad, in the installation and operation of chamber ovens in the manufacture of coal gas. This process is one intermediate between the system of carbonization in by-product coke ovens and ordinary retorts, the only essential difference between these chamber settings and by-product coke oven settings being that the retorts are heated by coke instead of gas. At Munich, Germany, great success has been had with inclined chamber settings. These chambers are very large and set at an angle somewhat less than 45°. In general the advantages of such a system are long period charges with high make of gas, good calorific value, great capacity for small ground area and comfortable operation for the men.

The amount of interest shown in, and the extraordinary results promised from vertical retorts and chamber settings, have caused the operators of ordinary horizontal retorts and inclined retorts to increase the size and duration of the charges, which practice resulted in better yields of gas and coke, together with increased candle power.

Great activity has been shown in the by-product coke industry. Numerous plants have been erected throughout the country, which, as a rule, have been very successful. The gas, though deficient in candle power, has been effectively enriched with benzol. In fact in one locality the original and main object of the plant—the manufacture of coke with gas as a by-product—has been changed to make gas the main object with coke as the by-product. Some writers have gone so far as to predict that, in the near future, small towns will be supplied by large central by-product plants by means of high pressure distribution.

Although, with one or two exceptions, the vertical retort systems, as originally designed in this country, have not proven entirely successful, there is a general feeling that vertical retorts have now passed the experimental stage, especially abroad, where it is said at least 4,000 Dessau vertical retorts are now in operation. At Providence, R. I., a contract was recently completed for the installation of 120 vertical retorts, of the Dessau type, with the idea of eventually doubling that number. The gas from such retorts is usually of lower candle power, but by this system the operators claim an increased yield of gas and ammonia with an improved quality of tar, great saving in first cost of land and buildings with improved conditions for the men.

The great increase in the production of petroleum in California, for which there was no immediate outlet, caused such a decrease in the price of this oil as to make it a very economical substitute for the crude material from which to produce gas. Under such conditions many oil gas plants have been installed in the extreme Western States. Many difficulties had to be overcome to bring this process to its present state of advancement, the improvements during the past year being devoted to the reduction of the hydrogen content in the finished gas with the idea of increasing the specific gravity. Improved methods have also been instituted for the separation of and the economic use of the large amount of lampblack produced in this process. Briquettes are made from the lampblack, which have been successfully used for generator fuel in water gas machines. It has been claimed by operators that in combined water gas and oil gas plants, using lampblack briquettes or lump lampblack for generator fuel in the water gas machines, just enough excess lampblack will be produced to provide sufficient fuel for the boilers.

Experiments at Riga, upon the removal of carbon bi-sulphide from gas, tend to show that methods consisting of a mechanical, rather than a chemical, separation, seem to be more efficient, wood charcoal proving to be the most effective absorbent, the charcoal being clarified by immersion in water. It was suggested that this clarification of the absorbent could be accomplished by simply flooding the purifier box during changes.

In England, at the East Hull gas works, a method for the removal of H_2S from the gas has been installed in which the sulphur is recovered as a by-product. Thio-sulphite of zinc is used as the reagent, and the process is so conducted that, after the free sulphur has been removed, the reagent is regenerated so that it may be used over and over again.

This same process has been further developed, in that ammonia and H_2S are now extracted with the oxidization of the latter into sulphuric acid. It is claimed that a plant of this character is not complicated and may be installed in ordinary buildings, being operated with low power and steam consumption.

Vertical oxide purifiers have been constructed through which the gas is made to pass in a horizontal direction, the efficiency of such boxes being about the same as ordinary boxes, except that there is considerable saving in labor and ground space.

A bill was recently introduced in Massachusetts legislature which provided for a decrease in the allowable sulphur content in gas. The discussion of this bill brought out the facts that the sulphur gases in a 20 grain gas, burning 25 feet per day would be readily absorbed by the plaster of the house for a period covering the probable life of the building. It was also shown that the outside air contained ½ to ¼ as much sulphur as the air in the room.

Two interesting forms of tar extractors have been mentioned in the English journals. The first type consists of a rapidly revolving shaft upon which is fastened radially a great number of steel wires. The fine particles of tar in the gas coming in contact with these wires, already coated with a thin film of oil or tar, collect until, by reason of the centrifugal force, they are thrown against an outside casing from which the tar is removed by suitable openings. The other device is a washer consisting of a number of perforated disks revolving in water, and as the tar collects it is washed off. It is claimed that these two devices operated in series will remove the minutest quantity of tar. Tests made upon the accuracy of the Venturi meter, in measuring the quantity of feed water to boilers, have shown it to be a commercially correct measuring device, even under varying pressures and temperatures of the water. It was shown, however, that this particular instrument was not accurate for velocities under 10 feet per second, so that the proper size instrument must be selected.

The growing importance of the heating value of gas has caused great activity in inventions and improvements relative to calorimeters. A recording thermo-electric calorimeter has been constructed in which the heated gases of combustion pass over one junction of the couple while the cool gas before combustion passes over the other junction of the couple. An electromotive force is generated which is proportional to the rise in temperature, the rise in temperature being dependent upon the combustion of the gas in question. The thermo-pile is connected with a recording electric meter while the gas consumed is measured by a laboratory meter.

Various experiments have recently been made upon fireclays and refractory material with the idea of selecting the material which will best withstand the conditions under which it is to be used. It has been suggested, for instance, that three grades of material be used for brick in carburetter checkerwork, each section being composed of brick selected for its adaptability to withstand the conditions met with. One writer has shown that the degree to which certain dyes are absorbed by clay is a very suitable index of its plasticity.

The agitation for good roads throughout the country at large has opened up new fields for the use of gas tars. Beside the ordinary methods of road painting applicable to dirt or macadam roads, a great deal of work is being done in road building by the penetration system. This method consists in sprinkling heavy tar while hot over a

crushed stone road bed and then covering the top with fine screenings. There is still another method now in use in which heavy tar, while hot, is incorporated with the crushed stone before laying, then put in place and rolled.

A patent has recently been granted in England for a method of making a very fine insulating material out of pitch and high-grade clays.

Despite the apparent approximation of creosote oils from water gas tar to the creosote oils from coal gas tar the known preservative qualities of the latter make them of greater marketable value. In experiments recently conducted the creosote oils from water gas tar and coal gas tar were compared with results showing great similarity. There seems to be no doubt that the oils from water gas tar are well adapted to wood preservation.

The manufacture of gas is becoming more and more of an exact science. Devices for the determination of various conditions and quantities have passed the experimental stage and by their use have proven their great practical value. A study of the progress in gas manufacture during the past year shows a healthy and encouraging development in all its branches.

APPENDIX.—Articles pertaining to gas manufacture which were published during the past year.

"Retort Settings Heated by Tar," London "Journal Gas Lighting," June 29, 1909.
"Experiments on Bitumenized Pavements," "Municipal Engineering," June, 1909.
"New Uses for Coal Tar Products," "Journal Gas Lighting," September, 1909.
"Tests on Venturi Meter for Boiler Feed," "Journal A. S. M. E.," October, 1909.
"Creosote Oils from Water Gas Tar," "Chemical Engineer," Septemper, 1909.
"Carbonization in Chamber Settings," "Journal Gas Lighting," June 22, 1909.
"Firebrick for Use in Water Gas Machines," AMERICAN GAS LIGHT JOURNAL, April, 1909.
"Quality of Fireclay for Gas Benches," "Progressive Age," September 1, 1909.
"Refractory Materials," "Gas World," August 28, 1909.
"Plasticity of Fireclays," "Progressive Age," October 1, 1909.
"New Gas Calorimeter," "Gas World," August 28, 1909.
"Recording Thermoelectric Gas Calorimeter," "Gas World," June 5, 1909.
"New Steam Meter," "Soc. Chem. Ind. Journal," June 30, 1909.
"Determination of Total Sulphur in Gas," "Progressive Age," September 22, 1909.
"Vertical Purifiers," "Gas World," August 7, 1909.
"Estimation of Water in Tar," "Journal Gas Lighting," October 5, 1909.
"New Tar Extracting Appliance," "Journal Gas Lighting," September 28, 1909.
"A Pound of Coal," Proceedings American Gas Institute, 1909.
"Vertical Retorts," " " " " "
"Oil Gas in California," " " " " "
"Sulphur in Illuminating Gas," Proceedings American Gas Institute, 1909.
"Identification of Gas Oils," Proceedings American Gas Institute, 1909.
"Power Plants for Gas Works," Proceedings American Gas Institute, 1909.
"Removal of Naphthaline from Illuminating Gas," "Journal Gas Lighting," Sept. 7, 1909.
"Determination of Sulphur in Coal and Coke," "La Genie Civil," June 26, 1909.
"Water Gas," "Progressive Age," June 1, 1909.
"Disposal of Waste Water from a Gas Works," "Progressive Age," Sept. 15, 1909.
"Anthracite Coals Adapted for Water Gas Manufacture," AMERICAN GAS LIGHT JOURNAL, June 14, 1909.
"A High Pressure Gas Plant," "Journal of Gas Lighting," Aug. 3, 1909.
"Simultaneous Extractions of Ammonia and H_2S," AMERICAN GAS LIGHT JOURNAL, Sept. 28, 1909.
"The Feld Plant at East Hull Gas Works," "Journal Gas Lighting," Sept. 21, 1909.

The President—Gentlemen, the object of appointing these Committees was that we might receive such reports as the one you have just heard read. I don't believe we ought to merely pass this exhaustive report, which represents days of work, without some recognition. The report is now in your hands. [On motion of Mr. Burt a vote of thanks was extended to the gentlemen who prepared the report, the Secretary to notify them accordingly.]

The President announced that the

REPORT OF THE COMMITTEE ON DISTRIBUTION

would next be considered, and the report was read by Mr. C. H. Chubb:

Your Committee on "Distribution" have no concrete examples or figures to report of any researches made during the past year. However, after looking over the subject of distribution as a whole, and taking into consideration all the articles and papers that have been prepared throughout the country, we came to the conclusion that the subject most pertinent to us as an organization is that of high or low pressure gas distribution, either as pertaining to new towns or to places where the present main systems are inadequate to take care of the rapidly increasing business.

Among the problems that are being presented daily to the gas men in this section of the country are: First. "What kind of a distribution system shall be installed (high pressure or low pressure) in small cities which are being supplied with gas for the first time?" Second. "How shall a distribution system (either high pressure or low pressure) which has been outgrown be reinforced or changed to give good pressure and supply?" Gas men of good authority are apparently about evenly divided on these questions. Both divisions give good reasons for their theories and beliefs, but the lack of definite information or results from practice are evident. The important things to be considered before deciding the first question are:

(a.) The size of the city and future prospects of growth.
(b.) The first cost of installation.
(c.) The operating cost.
(d) The matter of future development.
(e.) The question of good service.
(f.) The comparative danger risk, etc.

The above questions will each have to be subdivided and other matters taken into consideration besides the main issue; for example:
(b.) The life of wrought or steel pipe as compared with cast iron pipe.
(c.) The loss of candle power from compression and the type of compressor.

The solving of the second question is dependent upon local conditions almost entirely, but a few fundamental points will apply to all situations:

(a.) The kind of system already installed.
(b.) The lay of the ground in the territory supplied.
(c.) The future growth.

Your Committee, as noted above, have no definite report to make of any progress in distribution during the past year, the report being more in the way of a recommendation and asking for information, practical facts, and results to be obtained during the coming year, to be presented at our next meeting.

We have picked out this subject from the many important and interesting ones, found under the head of distribution, and do not wish to go on record as considering this subject the most prominent. It is hoped that the Committee for next year will not only make a report on the subject mentioned, but also on any subject that a member of the Association may suggest. Respectfully submitted,

GEO. A. GREENE,
C. R. HENSINGER,
C. N. CHUBB,
} Committee.

The President—Next in order is the

REPORT OF NOMINATING COMMITTEE,

which was read by the Secretary, as follows:

Your Committee on Nomination of Officers for the ensuing year beg leave to report as follows:

For President—Mr. Austin Burt.
For First Vice-President—Mr. G. W. Clabaugh.
For Second Vice-President—Mr. C. W. Fair.
For Secretary and Treasurer—Mr. G. I. Vincent.
For Members of Council—Two years: C. N. Chubb, A. W. Borden and W. S. Price.
For Members of Council—One year: A. L. English, H. C. Blackwell and B. C. Adams.

It is unnecessary for this Committee to make any recommendation for affiliation representative of the American Gas Institute, as we assume our retiring President, Mr. Geo. Waring, will be the representative.

L. L. KELLOGG,
H. B. MAYNARD,
J. C. GREY,
} Committee.

ELECTION OF OFFICERS.

The President—The next order of business is the election of officers. You have heard the report of the Committee on Nominations, and, unless there is objection, a motion that the Secretary cast the ballot for these gentlemen as read would be in order.

On motion of Mr. Addy the Secretary was instructed to cast the unanimous vote of the Association for the gentlemen named. [The Secretary subsequently reported that he had followed the instructions, and the President declared that the nominees were now the officers of the Association.]

A TELEGRAM OF SYMPATHY.

Mr. Burt—Perhaps this may not be the time to act, but it seems to me that we ought to send Mr. Vincent some word of greeting. However, whether it is in order or not, I move that the President or Secretary sends to Mr. Vincent a telegram expressive of our sympathy over his illness, and extend to him our heartfelt wish that he may soon recover his health. [Seconded, and carried by a rising vote.]

Mr. Haines—As Mr. Vincent would not like to have the Association get a wrong impression of his illness, let me emphatically say there is nothing fundamentally wrong with him; he is simply worn out from overwork. He has contracted no disease whatever, and is recovering very nicely simply by getting a royal dose of mountain air tempered by complete rest.

The President inquired if any general business were to be brought before the Association.

Mr. Macbeth—Under this head I want to present a matter in connection with the mention made in the President's address of the National Commercial Gas Association, and also the feeling incident thereto in Illuminating Engineering Society. I am a member of the latter body, and am also a Director in the National Commercial Gas Association. Undoubtedly a great many of the gentlemen interested in gas illumination should take membership in that Society, to keep in touch with what is going on in that end of the gas business. To-day over 50 per cent. of its members are gas men; but I doubt very much, however, whether 50 per cent. of the papers, or of the general interest, can be accredited to gas men. I think we will soon be able, however, to do our share and make a good showing. As to the National Commercial Gas Association, I believe the Iowa Association should know just what matters the Directors of that Association have had under consideration regarding affiliation, combined meetings, etc. In the first place, the aim of our Association is, I believe, wrapped up in the best and greatest advancement of the commercial ends of the gas business. That the American Gas Institute has been perfecting the distribution and engineering department is without question, and undoubtedly it has most fully and convincingly performed its duties. The gas business to-day is not all engineering, however; neither is it altogether a matter of sales; but is made up well out of each. The engineering end of the business has I think been pretty well taken care of, but there has been some question as to whether the commercial end has not been neglected. The National Commercial Gas Association was organized to better take care of that work. Heretofore it has not been considered of very much importance, but we commercial men feel our importance, and, without any reflection on the engineering department, I think I may venture to say that hitherto the commercial men have not been considered on just the same footing as they are to-day. We want to do better still. We understand that the big men of the American Gas Institute do not feel that the commercial men have as yet proven their worth, and it is questionable whether the latter could come out and ask for affiliation with the American Gas Institute, and not come in on the same basis as one of your State associations. If we had affiliation under these conditions, would we continue to go ahead as rapidly as we have in the past two years? Would our usefulness to the gas industry be greater if we were under the direction of the American Gas Institute? On the other hand, I have not heard that the American Gas Institute had solicited a closer connection with the National Commercial Gas Association.

In the N. C. G. A. "Bulletin," January, 1910, two letters were published, written by men who are recognized as being high in the general gas councils of this country, and I think a portion of these letters might have been of interest to the members of your Association who favor the amalgamation of these two greater bodies. I will read, first, the one by Emerson McMillin, President of the American Light and Traction Company:

"There may be good reasons for the amalgamation; but, if so, they do not occur to my mind. The objects of the two organizations are very dissimilar. The discussions of such papers as we read in the Institute will not be of as great interest to the commercial man as will papers presented to his own Association. Each Association has a large membership. The two together become unwieldy, especially for technical work.

"If the organic rules of the two organizations will permit amalgamation, then they will permit the individual members of the one organization to join the other. I do not believe that the good work now done by each Association will be improved, increased or expedited by an amalgamation. I do not think that the two Associations should even meet at the same time and place. The old adage, 'The shoemaker should stick to his last,' may be fittingly applied here. The National Commercial Gas Association has a distinct field in which to labor. It is doing the work splendidly. 'Stick to the last.'"

The other letter is by Mr. Samuel T. Bodine, President of the United Gas Improvement Company:

"Before attending the recent New York convention I favored the amalgamation of the National Commercial Gas Association with the Gas Institute, or at least a common time and place for the annual meeting. I frankly confess that I have changed my mind. The entire conception and execution of the New York convention were to my mind admirable. You commercial men have won your golden spurs, you are entitled to your own convention and to the inspiration of individuality in your further efforts to bring closer together corporations and consumer—so tremendously important to the future of our industry."

Mr. McMillin brought out one point when he stated that the rules of the two organizations will permit the individual members of one organization to join the other, which I think should satisfy any members who feel that these Associations may at any time get very far apart or become in any way antagonistic. There are a great many who are now members of both organizations, and are members of both boards of Directors, who will see that the best interests of each organization are properly conserved.

I understand that, at the recent meeting of the National Electric Light Association, to which a great many of us may look for precedents, they decided to organize a separate section or commercial body, which would work in connection with the N. E. L. A., in view of the fact that the commercial men in that large body were not advancing as fast as they thought they should and could under a separate organization.

Considering that neither the National Commercial Gas Association nor the American Gas Institute has to date declared a desire for amalgamation, I think we should wait until such time as either takes the initiative.

(To be Continued.)

Industrial Fuel Business in Small Cities.

[Paper read by MR. M. R. BUCKLEY, First Annual Meeting, Colorado Section National Commercial Gas Association.]

Industrial salesmen having to sell appliances in the average cities find that a proposition to replace coal or coke or other fuel is looked on as impracticable. It is practically the same as it was several years ago when gas ranges were introduced. Education was necessary before the gas range became popular; likewise, education is necessary to convince the business men that gas as a fuel is economical in a bakery, restaurant or shop.

On the other hand, a company must realize the benefit to be derived from long-hour, off-peak, industrial business. The demand, coming as it does between peaks, can be taken care of without interfering with the domestic demand. As a rule the investment has already been made for gas works and mains, in which case large consumers may be supplied without additional cost. Regular fuel rates are generally found to be too high for good competition with other fuels. A rate of 80 cents per 1,000 allows gas a fair chance for competition.

The salesman going to a town should get acquainted with gasoline costs and the price of electric power. He learns local conditions and the spirit of the people. The city where business is booming is the place where industries are apt to be free with money—by this I mean a new proposition is apt to be given a trial. On the other hand, where business is stagnant people make the best of their present equipment.

Large railroad and machine shops should be studied. Here we usually find a good opening for at least one industrial installation; with this as an entering wedge, and by watching the appliance to forestall complaints, further business may be added. I have in mind a railroad shop in which most of the repair work is done with gas. In the shop the gas company placed a rivet heater and very carefully watched results. The second heater was soon added and the master mechanic became interested. Desirous of making a new record, he was induced to follow up the installation. The industrial engineer explained the ease of combining air and gas in burners, and as an example made a brazier of gas pipe. This is followed by a tire-setter and pipe-bender. The simplicity of the burners and the facility with which they worked resulted in the installation of gas burners for every possible opportunity. At the convention of railroad foremen held last winter the shops were able to prove that their repair work was done 30 per cent. cheaper than like work done in similar shops.

An idea of what local conditions will do was shown at the steel works at Pueblo. Here the open-hearth ladles were dried with wood. These ladles, 10 feet in diameter and 15 feet high, required 2 cords of wood to dry them. The total cost of this wood, and the labor in handling, ran to a total of $1,200 a month. It was estimated that gas could be used with an air blast for $250. A new superintendent coming saw this waste and installed oil burners, using steam as injector. By doing so he cut the costs down to $225. It was an unlucky coincident that the idea occurred to this man before the gas company was ready with its proposition.

Here may be emphasized the fact that one installation causes the consumer to be interested and a few points on this appliance, and on other appliances, for his line of business are apt to bring further results. For example, the wheelwright salesman goes into a shop and finds tires being heated with coal or wood. A suggestion that gas would be better generally brings a reply that the first cost of a gas tire-setter is too high, and very likely expensive to operate. The industrial man finds that the air blast is used for forges and that a gas line is close to the air supply. He gets permission to make a tire-setter of gas pipe and, if possible, makes it on the premises. An inch pipe, bent in a semicircle, is drilled with ¼-inch holes and screwed in a tee.

Air and gas are then connected with the tee in such way as to cause an injector effect on the gas by the air. The air and gas cut off all the proper mixture to be obtained. A spindle with radiating arms may be placed in the center of the circle, which allows the wheel to be placed in the flame and moved about at will. Semicircles may be fitted to ells, which allow circumferences to be decreased or increased. One test of the tire-setter of this kind showed the cost of time and material to be $2.50 and took off a 4-foot tire, 4 inches wide and ½-inch thick in three minutes, and heating the tire for setting in 6 minutes for a gas consumption of 600 feet per hour. The owner of the shop got enthusiastic and boosted the opportunity; since then he has made a braizer for all his heavier work.

Every city has several candy stores making home candy, using coal or coke for fuel. Of course, the gas company wants to sell coke, but it seems advisable to allow gas to be sold, even though it does displace coke. In stores where the day's supply of candy can be made in a few hours, a candy furnace with air blast burners may be run at about the same cost as coke. On all-day making, and with gas at 75 cents, gas will cost about 25 per cent. more than coke. This increase is more than made up for by the lack of heat and dirt and the saving in labor. In one case, where coke cost $13 per month, the gas furnished ran $18 but permitted the shop helper to be used a-half day on other work. Many confectioners have coils in their fuel beds, and advance the argument that the loss of free hot water would make a gas furnace too expensive. This may be overcome by putting coils of a water heater in a candy furnace flue pipe or by putting a coil directly over the flames.

In this part of the country are many assayers' offices where space is no object. A coal fire, assay-furnace is built, and is a hard proposition to displace. Where the assay office is small, and space is an item, a gas muffle will be in order. The makers of these furnaces are willing to place them on 30 days' trial. A good burner, with a 10 by 16-inch muffle, will fuse the contents of fifteen 20-drams crucibles, and cupel the fusion on 400 feet of gas in 2 hours. Coal will cost the same, but will not allow as fine control. Fourteen by 18-inch muffle holding twenty 20 dram crucibles will fuse and cupel in 3 hours on 600 feet of gas. This makes about an even break with coal and is a competitor, if the first cost is not an item.

Many bake shops and restaurants have worn out coal stoves. In some of these places it is hard to convince a man who has always used coal that gas will do his baking economically. In many ways he is right, but demonstration of the oven in his shop will generally get the order. Take a small unit oven for an example; say, a 48-loaf capacity every 30 minutes, or 96 loaves per hour per oven. One bakeshop I have in mind has a battery of 5 ovens with an output of 1,500 loaves a day; in addition the owner does his fancy baking. A peculiarity of gas ovens is that bread only loses 1 ounce in 16, while with a brick oven 2 ounces are lost. Again, bread will keep fresh longer when gas baked.

Bicycle and auto repair shops have been using gasoline braziers. They generally have high pressure air for pumping up tires. A gas brazier of this type will give satisfactory results. Vulcanizers and enameling driers are much used. Plumbers and tinsmiths are using soldering iron furnaces and hot metal pots. These with gas are worthy of trial.

The electric company is bound to have many dissatisfied power consumers who some time or other have been rendered high bills, or may still be paying a high price for electricity. In taking advantage of this the gas engineer talks the price of operation for gas engines. It shows that the power may be developed for 1¼ cents per kilowatt, with a direct-connected engine and generator. This especially is applied to large installation and makes an ideal isolated plant. The repair account is small and the engine requires little attention, the attendant being able to devote ¼ of his time to other work. Where the city water is poor a gas water still provides an absolutely good water for 2½ cents a gallon. This water is especially adapted to storage batteries. The Colorado Telephone Company has adopted gas stills for all its stations.

Butchers save their grease and fat to make lard. This fat is rendered in 30 or 60-gallon pots fired with wood or coal. A 2-burner gas range costing $10 will do this work for about 30 per cent. more than the cost of coal. As an example: One man, rendering lard and making sausage, has two 60-gallon kettles fired with coal costing him about $9 per month. Two 3-ring burners ran a bill of $14 per month, but gave a sausage man 2 extra hours a day to work around the store.

Restaurants offer a good chance for all-gas kitchens, as in many cases space is an important item and much of the cooking is done behind the counter. As a model, an installation has an 8-hole gas stove, griddle plate, 3 or 4 cyclone burners under a steam table bake oven, broiler, water heater and a coke broiler, readily converted by running pipe burners about 4 inches above the meat and connecting them by individual cocks and air mixtures to a manifold. Most cooks require a long, wobbly flame for these broilers. This flame will not injure cakes or toast, though a short, sharp Bunsen flame touching meat will burn a black spot.

Coal oil for heating china kilns has attained popularity; but, on account of the odor, trouble and danger, the gas salesman is able to change these to gas. Different decorators have their own ideas on glazed and paint colors. With oil it is practical to fire in a certain time. The best glaze is obtained in 75 minutes. Gas allows a certain adjustment of heat, and the gas burner may be put on for $7.50.

Coffee and peanut roasters make good industrial business. They have a long-hour demand and require little attention from the gas company. The average cost of roasting coffee is about 7 cents per 100 pounds. The air blast should be on drilled burners, though atmospheric burners seem to give the best results.

Jewelers' muffle furnaces, auxiliary furnace heaters and water heaters for boarding-houses afford good business. With a general list of prospects the industrial engineer finds lots of work cut out for him. As before mentioned, large gas burner appliances are new and gas as a fuel is not thought to be economical. Education being necessary, in many cases sales have to be made on trial installation. The appliances should be put in under the industrial engineer, for in many cases he is the only person acquainted with it. Next, an actual demonstration should be given and adjustment made to obtain a higher proficiency. The consumer should be taught the construction of his appliances, exactly what to expect and how to remedy minor trouble. The industrial engineer must be posted on all new appliances, but can readily obtain all new catalogues from the manufacturers. He must be a mechanic as well as a salesman, as he will very likely be called on to keep the installations in repair. Every sale should be followed up from time-to-time, because, if an appliance is not a success, every prospect in that particular line of business soon finds it out and makes additional sales difficult. A system of regular weekly inspection is worth attention.

Large Industrial Appliances.

[Prepared by Mr. H. H. MacPherson. for the First Annual Meeting, Colorado Section, National Commercial Gas Association.]

When you speak of any industrial appliance, particularly any special kind thereof, you must have what I call the "Four Y's:" Efficiency, adaptability, adjustability and durability.

It is necessary that a gas appliance should be efficient, because, in order to compete with coal or oil to a close enough degree, so that the cost will be more than made up by the saving that can be gained by the superior application possible by gas use, you have to have the cost within a reasonable distance of what the same can be done for using coal or oil or other competitors of gas. So it is necessary that the appliance should be efficient—should utilize the gas to the job in hand with the greatest efficiency possible. It is necessary that it should be adaptable, for there are a great many cases where an industrial appliance has to be installed to do various kinds of work.

A good example is here in town, where they just have a blow torch. They build up loose firebrick and they do an enormous number of different kinds of jobs. The one I speak of is that of the Brecht Butchers' Supply Company. They bend small pipe, do tempering on small blocks of steel, put the wearing points on ice machines, the heating for small forge work, and a great many other things. It is necessary the appliance should have the proper mechanism on it, that it can be easily adjusted, so that, no matter where it is taken, whether in Denver, where the altitude is high, or in the East, where the altitude is less, it can be adjusted so as to be efficient.

It is necessary that it be durable, because it receives very hard usage in industrial work. A very good example of that is the hotel range. The ordinary household range will not do for hotel work at all. They do not have the time in these small restaurants to keep the burners as clean as they should be, and the top of the range will get dirty; things will slide across to the back with a bump, and the appliance has to be built in a very rugged manner. It would seem, according to all theory, if you show a business man a place where he can invest a certain amount of capital, and earn a very large interest on that capital, he will be willing to invest that money.

The industrial fuel business proves that is not so. You may go to a business man and show him beyond the shadow of a doubt, as far as you are concerned, and as far as you would think any fair minded man would be concerned, that you can save him money, thereby earning interest upon the capital necessary to buy, install and use your appliance; but business men have prejudices against gas. They believe that gas is expensive and that gas appliances are crude; or that, as in the case just cited, they are not substantial, that they will not stand up under the kind of work they are going to do. A man will tell you: "That range will never do for my work; it will go all to pieces in a month. Show me an appliance that will stand my work, and then I will talk to you." He doesn't say he will buy, he says he will talk to you.

So, in pushing an industrial appliance, at the start the line of least resistance is selected, and that line of least resistance is the restaurant or hotel or some place where they have to do business—a coffee urn or small hot plate or a cake griddle or something used long hours with a very small consumption and practically a small operating expense, and also a small initial first cost or installation cost. If the company in installing the appliance follows it up, and is very careful that each appliance that is installed is kept in such perfect condition and gives such fine operating results that it is satisfactory, an entering wedge is made for the introduction of appliances which will use a very much larger quantity of gas, those having a higher operating cost and also a higher first cost.

In a great many places the point is made that you can put forth a trial offer to a man and get him to install your appliance; but when a particular trial offer is made, it is not necessary, if the offer is properly made and the appliance is found to be satisfactory, to cut the price on the first cost of that appliance, or to cut the price on the gas you sell. It is marvelous how much greater profit can be made, and less trouble will come afterwards, if the price of the appliance is not cut in the first case, nor the price of the gas cut in order to introduce gas-using appliances; but the money that would be saved to a consumer on using the appliance in that way is put into the care and the necessary business solicitation and the advertising necessary to convince people that they want more gas.

As an example of that we put in one place a bake oven—it was simply to be used for intermittent work, and was put in there on a very liberal trial proposition. While it was in it was followed up very closely and kept in perfect adjustment. At the end of a year the gentleman was so firmly convinced that he bought another bake oven, and now uses the two to do every bit of the work for a large restaurant. He pays the full price for his appliance and also pays a liberal readiness-to-serve upon the gas he is using. There was a case where we might have cut the price of the appliance and the price of gas without getting the business, but by spending our time and money on solicitation or following up that installation, being sure the man was satisfied with it, we were able to get the business, and that has beenan entering wedge for any number of similar installations in Denver.

Another case where application discovered a better method of operating appliances than had been used theretofore in the same place. We installed a candy furnace without blast. It didn't do the work any quicker than coke did. It was simply better because it was not so dirty. We installed an additional furnace up there with blast. Where large batches of candy had been made in that place before in a coke furnace, the method was changed so that smaller batches were made. A batch would be put upon a furnace without blast. When it had gotten to a certain temperature it was taken to the one with blast and finished quickly, another batch could in the meantime be put on the furnace without blast. Three men were used where only one had been used before, but by using the candy furnaces in that way the candy was turned out in very much less time, so much less that the labor cost was very much less; the batches were small enough so they could be worked clear through to conclusion before the candy had time to change structure; this particular candy being hard, didn't break up. We installed another furnace, and now these people have one blast candy furnace—one without and two with blast—and do all their work on them. There are very few places where they do not use at least two furnaces as they go along. They make the batches smaller, use two furnaces and save money all around.

Mr. Buckley mentioned several industrial fuel installations where special appliances were made. One of the best I know for the necessity of having the deterioration of any appliance taken care of, having the consumer educated to use it properly and look after its adjustment, is in the matter of china kilns. It was mentioned that the Revelation people sold the china kilns better operated with oil. In changing over china kilns we have never had one that did not stay right on top of that installation, you might say, for two months after it was put in, to be sure its operation was perfect and it would give satisfaction. If we had not done that we would have been unable to hold the installation after we put it in.

After the industrial fuel business has been started by trial offers, and the prices and the rates have been kept up, it is surprising how easy it is to get additional installations of the same kind. You simply tell the consumer about a certain person that has an installation of that nature, telling them what satisfaction it is giving, and simply say: "Well, go down and see it." As said bef ore, if the first installations are taken care of the way they should be, and all subsequent installations, of course, likewise, so you can refer to people who already have installations, it will be much easier to get additional ones. The booklet I will pass around at the close of my talk is a sample of the way that method is going to be followed in Denver. We are going after all the hotels and restaurants not now using our gas appliances with this booklet. It shows ihe actual installations, gives the names of the chefs or the persons operating the installation, and we also have a letter in there from Mr. Allen, of the "Home Dairy," who has two ovens, and it took two years to get the second oven in. He is probably the biggest booster for gas ovens we have. Following up this method of keeping your appliances in adjustment, being sure that no consumer using an appliance ever gets dissatisfied with it, so that when you send anyone else to him he will be a knocker on your appliances, means that the industrial fuel field is almost limitless. The work Mr. Saldana will take up will show you how important it is in opening up new fields for industrial fuel to have the proper appliances to begin with. These appliances, which will be demonstrated to you this afternoon, are what are known as the Improved Appliance Company's appliances. Every one of them is the result of a long series of exhausive experiments made on all improvements of appliances of that kind that were in existence at the time these appliances were made, and we now feel that the most of these appliances are in condition at least to give good operating results. As I have said all through my talk, the main thing in industrial fuel work is to be sure that your first installations are boosters for everything that comes afterwards, and that the appliances you put upon any new work you may find are satisfactory, then your industrial fuel business will grow by leaps and bounds.

Large Industrial Gas Appliances.

[Read by MR. M. T. SALDANA at the first Annual Meeting, Colorado Section, National Commercial Gas Association.]

I think one can get the best idea of the field of industrial fuel by visiting the installations that have been in operation for some time. The field is too broad to be confined to a few appliances, but I think some are more or less representative of the work. It is a good thing to classify appliances, one good basis being according to their use. For instance, the appliances used in the food stuffs industry and in the metallurgical or metal industry would fall in two natural groups. Then we have the china kilns which stand by themselves, and, of course, there is also a class which might be called miscellaneous.

Starting with the food industries, we have there an oven with 4 shelves, capacity for 8 loaves in each shelf, making 48. It has been a very good seller, and, as an oven, it is as perfect or more so than anything else we know of in the way of gas. We have 25 or 30 connected in the city, and all give good satisfaction. Of course, it can never take the place perhaps of a very large installation, where they have rotary ovens—at least, it has never been worked; but for intermittent work it is the best thing there is, and the people who use it are very willing to admit that. There is a very large pie concern here in town that has a rotary brick oven, with capacity for 300 pies, so it costs them nearly as much to bake 30 pies as it does 300. For that purpose very soon we expect to sell them one of these ovens; that is, to bake small batches.

The oven is constructed according to results obtained from very exhaustive experiments. The burner is T-shaped, with branches extending outward, so there are two rows of flames on the sides, directly under the side flues of the oven, that distribute the heat along the whole length upward. It may be seen that the openings into the ovens or shelves are different to make allowance for the tendency of the gas to ascend, and the upper part be hot. The oven was built very substantially. It has seen what I might call very rough service, and it has stood up nicely. We shipped one a short time ago to Honolulu. I think that is the longest distance the oven has traveled; but it may be found all over the States now. It occupies a floor space of 36 by 30 inches, and is 5 feet high. On top we have a thermometer which, although it is not supposed to be a guide for a theoretical man to go by in baking, gives an idea of where the operator stands, so that if he wants to use the temperature he needs he knows how to get it. It is an indicator. These descriptions will necessarily be very brief.

Next in the order of appliances comes the candy furnace, which we have also put in very successfully. The appliance here shown is connected with blast, but we make another one without blast which is, of course, cheaper. The importance of that is very readily seen. The rings on which the kettle rests are adjustable so that any size can be used. Candy furnaces are not very efficient, but this one, we have found, is more efficient than any other we have tried. There is an outside sheet iron drum, lined with insulating material, and an inside cast iron, also lined. The blast regulator is regulated by both gas and air cocks, and strikes the kettle, separating the flame between these two fronts where the flue is on the back. That insures a very efficient way of using it, but, as I have said, candy furnaces are not very efficient because a high temperature is required, and the gases have to be very hot. The idea of putting water coils in the flue is quite a help in selling them, because it makes quite a saving to the consumer.

Another adjunct to the modern gas kitchen is the toaster. The Denver Gas and Electric Company makes three sizes of that toaster. It has nothing but two burners, one on top, the other on the bottom, toasting the bread on both sides at once. It is the smallest size, and is good for three slices at a time. It takes two or three minutes and produces a very nice toast. It requires no turning. It simply can be put off right on the plate. The smallest size is very simple. The little tray is, of course, to catch the crumbs. The larger sizes have to be different, on account of the tendency of one burner below to interfere with the burner above; that is, the spent gases smother the ones on top, so to change that we had to device baffles so as to make each a shelf independent of the other.

Next, I might say a few words about broilers. We have converted into gas a number of coke and charcoal broilers, and have a number of installations of broilers. Along with the food industry I might mention the little Cyclone burner, and very few coffee urns in town are without one of those under it. It is practically indestructible, never gets out of order and gives the best satisfaction. It burns about 15 feet. That oven runs at its highest capacity 100 feet per hour. To start out it will run on that full capacity about 10 minutes, then you reach the baking temperature. After that the burner can be turned down. The candy furnace which I mentioned without blast is supplied with a 3-ring industrial burner which consumes about 300 cubic feet per hour. The one with blast depends entirely on the pressure, because there is no orifice on the gas. We can burn as high as 450 or 500 feet on that, if necessary.

The food industry, of course, includes a number of ways in which stuffs are made to eat. For instance, the ice cream cone business, which is operated almost entirely by gas, at least in this city; I do not know of any installation that uses any other fuel. There is an ice cream cone factory operating all day and all night in the summer time. It is possibly the best kind of business, because it is so even. This load factor is the best possible. The ice cream cone is made in clusters of 12 or 6, with a gas burner underneath. There is a mould, really a die, like rock. There is a male and female die. The male is heated and the dough or composition is placed into it, and the female crushes that into place, and the whole thing comes in a cluster of 12.

The coffee roaster business is very profitable on account of its being day load almost entirely. We have not gone after installations originally intended for gas, like those using the "Monitor" coffee roaster, but we are in the habit of changing over into gas any coffee roaster installation. We have had considerable experience along that line, so we are prepared to meet any size, and usually do it by means of an appliance burner. Then there is doughnut frying with innumerable other processes where they prepare stuff for public consumption to eat. The Improved Appliance Company makes a series of lard-rendering furnaces that can be operated for soap making or any purpose at all that requires boiling—boiling syrups. Its adaptability is great. The largest kettle holds, I think, about 100 gallons.

From the food industry we can go to the metal industry, where the heat acts on some kind of working material whose shape it is wanted to change. First we have muffle furnace, which is supplied with an Improved Appliance Company blower, making it a self-contained machine. It operates on about 175, perhaps 200, cubic feet per hour, but averaging no lower than 125. It is a very flexible affair, so that most any change in temperature can be obtained, and the most difficult cupellations have been performed very successfully in there. The blower, of course, can be obtained separately for any appliance that requires a blast. They will provide any burner with different sizes of motors up to 800 to 1,000 feet an hour. Mr. Buckley spoke of the capacity of the different sizes of muffles. An ordinary silver assay can be reached in about 1 hour, with a total consumption of about 175 or 180 feet.

Then there is a melting pot. The smallest size made by the Improved Appliance Company holds 250 pounds of metal, and I have here some tests we have made on it. That is, a 250-pound; but we make a larger one that holds 1,000 pounds. The lead was put in in rough pigs, and it was melted down in 82 minutes, 1,000 pounds, with a total gas consumption of 205 cubic feet, or the consumption per hour was about 150 feet. It is supplied with a gauze burner, just a straight bunsen gauze burner operating exactly below the kettle. The inside of the pot is lined with an insulating material, so that very little heat is lost by radiation. The pot is supplied with those projecting feeds which not only increase the efficiency of it considerably, but help to spread the flame and make it more uniformly hot. With the ring out of place we simply have a cup where the kettle feeds.

Another successful blast appliance we have is a rivet heater. That gives an idea of its operation. The appliance is the No. 2, I think, or the smallest size of the Improved Appliance Company. It has cast iron sides, top and bottom, so that it is very substantial and can stand very rough usage. Of course, the capacity of these heaters depends on the size of the rivets. For instance, a rivet ½ inch in diameter and 2 inches long, with the No. 2, which consumes about 175 or 200 feet an hour, we can get out 300 per hour, or in a day of 8 hours 2,400, which, as you can easily see, would keep two ordinary gangs busy. In fact, it does it in practice at the Denver Engineering Works and at the C. & S., where they have one of the same capacity as ours. Then if we increase the size of 2-inch rivets to ⅝, we find that only 240 per hour can be supplied; of ¾ by 3 inches, 120 per hour, or in a day of 8 hours, 960. Then we made tests with the No. 3, which is larger than that, and consumes about 250 cubic feet per hour. With that the largest rivet we have tried was, I think, 7 by ¾ inch. They were very large rivets used in one of the large buildings here in Denver, and we supplied them so fast that the gangs couldn't keep up and the operator was more or less rattled. We didn't know how

to operate the machine slow enough, in fact. So, as far as capacity goes, there is no limit to it, really.

I should have mentioned, in connection with the soft metal pot, this last addition to the set of them which we have just put out. It is very convenient in plumbing schools and tinner shops. The kettle contains about 25 pounds and is supplied with a burner underneath, burning on the average 25 feet, and about 5 or 6 feet will keep it hot when it is melted. So that it is a very convenient appliance and one that is appreciated. At the Y. M. C. A. plumbing school we have two. At our own shop we have found them quite convenient.

The Improved Appliance Company makes industrial burners in 4 sizes, consisting of single, double, triple and quadruple ring burners. The first ring is made to burn about 50 feet, the second, 150 feet, and the third about 200, so that on our 4-ring burner we are burning about 500 feet an hour. That, so far as I know, is the largest one made. There are innumerable ways in which this burner can be applied. We have had it in steam generators. It is especially suitable for dairies and places where no pressure is needed, but just vapor, just a little steam, and it has given very good satisfaction. Then it can be put under corn-popping machines and to do heating of most any kind.

Last year we put out a blast-soldering iron, one that saves the operator the trouble of inserting his iron in a furnace, and it keeps hot. It doesn't have to be changed; that is, one iron while the other is heating. The iron will keep hot all the time. We have a number of them at the Hardesty Manufacturing Company here in Denver, and recently we sent some to one of the railway shops and to the F. M. Davis Iron Company, and they are operating very nicely in both cases.

The different sizes of braziers that Mr. Buckley mentioned as being very suitable for automobile and bicycle shop work, are suitable for large and small work. The smallest ones can be used for brazing very small wire and for a number of operations requiring little heat; but a high temperature will burn 15 or 20 feet. We made one especially large one to straighten an I-beam at the west station, and had the misfortune of having one of our boilers explode, and we consumed 100 feet an hour. Some of those large ones may be seen at the C. & S. shops. These appliances are more or less standard; they have been tried, and we can depend on the standard stock for supplying special needs. Perhaps it is the only policy for all gas companies to have a repair department that will not only do repairing and keep up installations, but also design new appliances and build them. We have done that very successfully in Denver. Some of the special installations are shown in a set of photographs, and there are others we might mention. To facilitate the work of making these special appliances the Improved Appliance Company make a set of mixers shown in different sizes. These mixers are adjustable in every shape. They can be adjusted for gas, the orifice being simply an ordinary block which can be changed at will. Then the burner can be fitted into it. We have the different sizes, or the same sizes, standard iron pipe, 1 inch, 1¼ inches, 1½ inches, 2 inches, up to 2½ or 2⅝ inches, so that all we have to do is to design the burning part and the burner or mixer we can obtain from stock.

I mentioned a natural division of gas appliances. The other is one from the mechanical point or gas burning point of view; that is, atmospheric burners and the blast. These mixers are for the ordinary atmospheric burners, but blast appliances can be home made just as easily as the atmospheric appliances. We have different kinds of blast burners that we have not time to describe now, but you can see them in actual operation.

(Continued from page 206.)

Duties and Liabilities of Gas Companies to Public with Reference to Supply of Gas. Validity and Effect of Regulations of Gas Companies.

[Prepared for the JOURNAL, by MR. JOHN EDSON BRADY, Attorney-at-Law.]

Rules and Regulations.—A gas company may, in the discharge of its duties to the public, enact reasonable rules and regulations, and, when it has done so, all persons dealing with the Company, as well as the Company itself, must yield obedience thereto. These rules, however, must apply to all consumers alike and must be reasonable.

The material facts in Shepard *v.* Milwaukee Gas Light Company, 6 Wis., 539, are as follows: The plaintiff was a merchant doing business on East Water street, Milwaukee, along which the pipes of the defendant Gas Company were laid, and had fitted up his store with the necessary apparatus for lighting it with gas. He then applied to the Company to furnish him with gas, and tendered $5 payment in advance. The Company, before it would turn on the gas, required the plaintiff to sign what purported to be an agreement, and was at least a promise to take gas according to the terms and conditions contained in the printed "rules and regulations" of the Company. This the plaintiff refused to sign, and for that reason the Company refused to furnish him with gas.

The plaintiff's action was brought to recover damages, and in the justice's court he was awarded a verdict of $100. On appeal the case was argued with great ability and candor on both sides, the Gas Company desiring particularly that the court should review its rules and regulations and pass upon the legality of the Company's action in the matter. The appeal was taken more for this very commendable purpose than for the purpose of obtaining a mere reversal of the verdict. The court took pains to state, at the outset of its opinion, that the Company was entitled to make all such needful rules and regulations for its own, and the security and convenience of the public, as are reasonable and just; "But these rules and regulations," said the court, "must be reasonable, just and lawful, and not capricious, arbitrary, oppressive or unreasonable. Were it not so, the whole network of pipes and machinery would be at the mercy of the careless and malignant."

The printed rules and regulations were offered in evidence, and the court passed upon them for the purpose of deciding whether the Company was justified in requiring consumers to sign an agreement to be governed by them. The court saw no objection to a rule requiring application for gas to be made in writing, saying: "From the nature of the article produced and used, as well as from the manner of its use, great care is requisite in its management, and there is a kind of implied duty or obligation resting upon those who use the gas, to use it in such a manner as not to injure or endanger others who use it."

The third rule allowed the Company to demand security for the gas consumed, or a deposit of money to secure payment thereof. With reference to this rule it was said: "As the delivery of gas is necessarily its consumption, and as the amount delivered is ascertained by the amount consumed, it would seem to be just and right that the Company should not be compelled to furnish it without reasonable security for payment, in convenient amounts and at proper periods."

The ninth rule authorized the Company, by its inspector, to have free access at all times to buildings and dwellings, to examine the whole apparatus and for the removal of the meter and service pipe. This rule was criticized in the following language: "The gas apparatus in the buildings, stores and dwellings, is the property of the individual, put up at his own expense, in which the Company has no interest. It may be proper for the Company to have the right of inspecting the gas apparatus, to determine its sufficiency and safety, and at stated periods to inspect the same, or perhaps oftener, upon reasonable notice therefor. But certainly it cannot be necessary that the dwellings of gas consumers should be subject to instantaneous visitation at all times without notice. Nor is it to be conceded that the Company should have the right at all times to enter the premises and remove the service and meter at its pleasure. This regulation is too general and cannot be upheld, or at least a party cannot be required to subscribe to it, to entitle him to be furnished with gas."

Another regulation (14) reserved to the Company the right at any time to cut off communication of the service pipe, if it should find this step necessary to protect the works against abuse or fraud. This regulation also was found unreasonable. In the language of the opinion: "Here the Company assumes the whole power to decide upon the question of abuse or fraud, either in fact or in anticipation, without notice, without trial, of its own mere motion. This summary jurisdiction would not be given to any of the judicial courts in any case, but upon the most urgent emergency. Much less could it have been the intention to confer power upon one of the parties to a contract of such vital importance. It is no hardship for the Company to resort to the same tribunals, upon like process, for protection against fraud, as the law provides for individuals."

Rule 16 provided that, after the admission of gas into the fittings, they should not be disconnected or opened, either for alterations or repairs or extensions, without a permit, which could be obtained at the Company's office without charge; and under this rule any gas fitter or other person, who should violate this provision, could be held liable to pay treble the amount of damages occasioned thereby. "It is not to be allowed," said the court, "that the Gas Company can impose penalties in this way, or make the submission to such penalties a condition precedent to the right of the citizen to be furnished with

gas. It is singular, if the Legislature has given to the Gas Company the right to inhibit the citizen from altering the arrangement of his gas apparatus in his dwelling, without its assent first had and obtained, or from extending the same; and still more singular that the Company should claim the sovereign right to inflict penalties upon him for doing so, and not him only, but upon any other person who should act in the matter without its consent. The statement of this proposition is its answer."

Rule 17 provided that the Company should have the right to substitute alcohol for water in the meters, and to charge therefor. All that the court found necessary to say on this rule was that "The Company is entitled to charge for the gas consumed * * * and the mode of measurement, whatever it is, must be correct."

For the objections stated it was held that the Company had no right to require applicants to subscribe to its rules and regulations and the verdict against the Company was affirmed.

In State *v.* Sedalia Gas Light Company, 34 Mo. App., 501, it was said: "It is a well understood principle that corporations, so engaged as the appellant gas company may, in their dealings with the people, adopt and enforce such reasonable and just rules and regulations as may be necessary to protect their interests and further the designs of their incorporation. They have such power, too, without an express grant to that effect. It is an inherent power implied from the nature of the business in which they are engaged, limited only by express statute or ordinance, or by a sense of what is right, reasonable and just."

Right to Require Deposit.—In Owensboro Gas Light Company *v.* Hildebrand; Ky., 42 S. W. Rep., 351, the court said, of the gas and electric companies against which suit was brought: "Their business is affected with public interest, and they are quasi-public corporations, and practically they have a monopoly of the business of manufacturing and furnishing gas within the corporate limits of the city. It is, therefore, their duty to furnish the city's inhabitants with gas, and to do so upon terms and conditions common to all, and without discrimination. They cannot fix a variety of prices or impose different terms and conditions according to their caprice or whim. They may, however, fix reasonable rules and regulations applicable to all the consumers alike." In this instance the companies undertook to compel the consumer to deposit the sum of $20 as security for his future consumption of gas and electricity, and, upon his refusal to comply, withdrew their pipes and wires from his building. Suit was brought by the consumer to compel the companies to furnish him with gas and electricity. It was conceded by the consumer that the companies might prescribe reasonable rules and regulations and impose reasonable conditions upon the consumer, requiring proper security for the payment of bills, and even require deposits in advance. But the contention was that the companies had adopted no such rule or regulation as they attempted to enforce against him, and such appeared from the evidence to be the fact. The court granted the relief sought by the consumer.

In another case it appeared that the proprietor of a hotel, which had been receiving gas from the local gas company, was notified by the company that it would not continue the service unless the proprietor deposited $100 with the company. The bills for gas used in the hotel averaged $60 weekly. The hotel proprietor refused to make a deposit of the amount demanded by the company, but tendered the sum of $75, which the company refused to accept. The company, thereupon, cut off the supply of gas and the hotel proprietor brought suit for damages. The company defended upon two grounds: First, that the company was under no legal obligation to supply all comers with gas; and, second, that if such a duty did exist, then the hotel proprietor, by refusing to comply with the requirement made by the company, had waived his right to compel the company to render service to him. With reference to the first contention, it was held that the company was under a general duty to supply all applicants with gas. But on the second contention the company had a defence. Gas companies, in the discharge of their duties, are entitled to govern their actions by reasonable rules and regulations, and, when such regulations have been adopted, all persons dealing with such companies, as well as the companies themselves, must yield obedience thereto. The court said: "The duties of the company toward the citizen, and of the citizen toward the company, are somewhat reciprocal, and any rule or regulation, or course of dealing between the parties, which does not serve the just rights of both, ought not to be adopted, and cannot receive the sanction of the courts. When the defendant company made the connection of its service pipes and mains with the pipes and fixtures of the Biddle House, it imposed upon itself the duty to supply the house and premises upon reasonable terms and conditions with such amount of gas as the owner or proprietor might require for its use, and pay for, so long as the company should exist or do business. If the defendant, as one of such conditions, required the plaintiff to give sufficient security that he would make such payment and perform such conditions, before making such service, I think it would have been reasonable, but in place of such security the plaintiff demanded a deposit of money with the company, as had been its custom. This the company had a right to do. The condition was a reasonable one." Williams v. Mutual Gas Company (Mich.), 18 N. W. Rep., 236.

The question whether a deposit required by a gas company of its consumers is reasonable, is one to be decided by the jury, where it appears that the Company has always required the same deposit of all its customers, and that it had never been objected to as unreasonable. Bennett *v.* East Chester Gas Light Company; 57 N. Y., Supp., 847. In this case it was held that a requirement of a $5 deposit was not unreasonable.

Right to Rental for Use of Meter.—Where a gas company furnishes meters it has the right ordinarily to charge a reasonable rental for the use of such meters, provided the charge is not discriminatory, and does not violate any statute or contract, as, for example, a statute or contract fixing a maximum price for gas. It has been held that a gas company, though obliged to furnish gas to all applicants by statute, may refuse to turn on the supply until the applicant furnishes a meter, or agrees to pay a monthly rental for one provided by the Company. This was the holding in Smith *v.* Capitol Gas Company; 132 Cal., 209. The statute in question, which was section 629 of the Civil Code, provided that, "Upon the application, in writing, of the owner or occupant of any building or premises distant not more than 100 feet from any main of the corporation, * * * the corporation must supply gas as required for such building or premises, etc.;" and, further, that "if, for the space of 10 days after such application, the corporation refuses or neglects to supply the gas required, it must pay to the applicant the sum of $50 as liquidated damages, and $5 a day as liquidated damages for every day such refusal or neglect continues thereafter." The plaintiff was an occupant of certain premises in the city of Sacramento, Cal., located within 100 feet of one of the defendant gas company's mains. The plaintiff served a written notice on the defendant Company that that he wished to be supplied with gas, and the Company replied within 10 days that it would be pleased to serve him if he would provide himself with a meter, or agree to pay the Company a rental of 50 cents a month for one. The plaintiff did not accede to this proposition, but waited until the penalty amounted to $1,300 and brought suit.

The rental demanded by the Company was found to be fair and equitable; but it was shown that the Company had no rule requiring the payment of rent for meters and that it did make such a charge against its other customers. In answer to this the Company proved that it had supplied gas to the plaintiff on a previous occasion and that during an entire year the plaintiff used only $1.75 worth of gas. His place was fitted with electric lights which he used most of the time. The gas which he consumed during the year was not equal to a one sixth part of the annual expense of the meter. Under these circumstances, and inasmuch as the plaintiff's written demand did not specify that he would require a greater quantity of gas than he had formerly used, it was held that the Company was fully justified in refusing to furnish the gas. The plaintiff did not recover anything in the way of liquidated damages.

A meter charge of $1.25 a month, where the amount of gas consumed was less than 500 cubic feet a month, was held to be reasonable and valid in the case of State *v.* Sedalia (Mo.) Gas Light Company, *cited above.* When the amount used was less than 500 cubic feet a month this charge covered the amount used as well as the meter rental. The court considered it evident that the purpose of the charge was to exact fair compensation from those requiring gas connection, where the amount consumed should be very small, in fact, almost nominal.

"It is a matter of common knowledge," said the court, "that to furnish the gas at hand for the very small or nominal consumer requires the same outlay in the way of a meter, periodical inspection and repairs, with weekly or monthly visitations, that is required of very large consumers. The same investment and the same care and oversight are required where the gas monthly consumed shall not exceed 10 cubic feet or even 1 cubic foot, as where the amount used may be 10,000 cubic feet. At the rate charged then in Sedalia, as

alleged in relator's complaint, the Gas Company would be required to invest and expend, for the benefit of this merely nominal consumer, more dollars than cents received. The rate there charged, as alleged, is $2.50 per 1,000 cubic feet. For this 10 cubic feet thus consumed, and for which the Company could receive pay of only 2½ cents, the cost to the Gas Company may be many dollars."

It is different where a company's franchise requires it to supply gas at a price not exceeding a certain specified sum per 1,000 feet. In Montgomery Light and Water Power Company *v.* Watts, a recent Alabama decision; 51 So. Rep., 726, it appeared that the Company had accepted a municipal ordinance, requiring that the Company "at all times supply the inhabitants of the city with gas for lighting and heating purposes," at prices not exceeding $1.62 per 1,000 feet for lighting purposes and $1.08 per 1,000 for heating and other purposes. The Company attempted to charge a meter rental of $1 per month against these who did not consume $1 worth of gas during the month. Admitting that this was a reasonable regulation, it was held that the Company could not exact the rental for the reason that the Company had accepted a franchise requiring it to furnish gas at rates not exceeding certain specified amounts. It could not, therefore, tack on to the maximum rate an additional sum in the form of a meter rental. It could not be argued that the ordinance fixed the price for gas only, for, said the court: "The meter belongs to the Company and is placed there by it in order that it may ascertain how much gas is being consumed." In general it will be found that the cases, which sanction the charging of a meter rental, are based upon ordinances or contracts, differently worded from the one here involved. If the Company wishes to make charges of this character it should see to it that its charter is not so worded as to deny it that privilege.

In Louisville Gas Company *v.* Dulaney, 100 Ky., 405; 38 S. W. Rep., 703, it was held that a gas company whose charter required it to furnish gas to private consumers, "under reasonable regulations," at a price not to exceed $1.35 per 1,000 cubic feet, could not charge a meter rental in addition, where less than a certain quantity of gas was used. The charges for meter rent varied, according to the size of the meter and the amount of gas consumed. It was said: "While the consumer may cause it (the meter) to be inspected, and may test the accuracy of its work, his concern is only to ascertain and pay for what gas he has consumed, and cannot be called on to pay for the apparatus used in its measurement any more than he can be made to pay for the machinery used in its manufacture. He is required to pay the legal rate for the quantity consumed, and this quantity must be ascertained by the Company by some correct method." And, further: "Presumably the Company was aware, when it obtained its charter and established its monopoly, that there would be small consumers as well as large ones, and there would be less profit in furnishing the one class than the other, but it did not on that account reject the charter or retain the right to add to the price of the small consumer's bill."

But a somewhat different conclusion was reached on this point in the case of State *v.* Sedalia Gas Light Company, *cited above*. However, the charge was figured on a slightly different basis than in the Alabama and Kentucky cases referred to. In the Sedalia Company case a minimum charge of $1.25 per month, designated a meter rental, was made against those who used less than 500 cubic feet of gas per month. This covered the gas consumed as well as the rent of the meter. The ordinance, which it was claimed the Company had violated, provided that the Company should furnish to the city and its inhabitants "a good article of illuminating gas, at a price per cubic foot not exceeding the rate charged in similarly situated places."

It was insisted in the argument against the Company's right to exact the charge that, in so doing, the Company was not collecting for "gas *consumed*," but was charging *rental* on the meter, and that the Company was permitted to charge for gas by the *cubic foot* only. This construction was held too narrow, and the Company was permitted to continue collecting its minimum charge of $1.25 monthly.

A New York statute provides that "No gas light corporation shall charge or collect rent on its gas meters, either in a direct or indirect manner." In the case of city of Buffalo *v.* Buffalo Gas Company, 81 N. Y., App. Div., 505, it appeared that the Company had adopted the practice of rendering a minimum gas or service bill for every meter on its books. It was held that evidence that the minimum charge varied according to the size of the meter justified a finding that the charge was intended to cover the rental of the meter and not simply to cover the general expenses of the Company, independent of meter rental.

Right to Regulate and Control Meters.—Inasmuch as the law requires gas companies to keep their meters and other apparatus in proper working order, and holds them responsible for injuries or losses occasioned by a failure to observe this duty, the companies are legally entitled to the control of the meters. For, as was said in the case of Blondell *v.* Consolidated Gas Company; 89 Md., 732, 43 Atl. Rep., 817, "it would plainly be as awkward as it would be unjust to impose such a responsibility, and without the right of protecting itself from loss caused by interference on the part of others."

In the case maintained the plaintiff Gas Company owned gas meters on the premises of the defendants. The Gas Company brought a bill claiming that the defendants had, without its consent, tampered with its meters, pipes and connections for the purpose of attaching governors to reduce the consumption of gas. The Company asked that the defendants be enjoined from further interference with the meters and pipes and that they be compelled to remove the governors already attached. The relief asked for was granted by the court.

In the opinion it was said: "If, as we have said, the meter and its connections are the property of the plaintiff, and if, as the law requires, it is placed in the consumer's house for the purpose, and for the sole purpose of registering the consumption of gas, we are unable to understand upon what theory the defendants can successfully claim the right to use this apparatus for another and entirely different purpose. The meter is a device for measuring the consumption of gas, which the law requires to be used by the plaintiff as a part of its system, while the governor which the defendants claim the right to affix thereto is a device for regulating the pressure of the gas after it passes through the meter. Now, it seems to us that the large mass of testimony contained in the record, showing on the one hand that the affixing of the governor was, and on the other hand that it was not injurious to the meter and its connections, is entirely beside the question; for whether the alleged acts were or were not productive of injury, they were, in the eye of the law, trespasses, if, as we have said, the meters are the plaintiff's property."

Liability of Company for Damages for Refusal to Supply Gas.—In Hoehle *v.* Allegheny Heating Company; 5 Pa., Super. Ct., 21, it was held that the defendant Company was liable for damages for the death of a person resulting from the discontinuance of the supply of gas in extreme cold weather. Before the gas was turned off notice was given to consumers generally, but the Company failed to give notice to the plaintiff, whose husband, at the time, was ill with typhoid fever. The room which the husband occupied became cold immediately upon the shutting off of the gas, and he took a chill from which, according to his physician's testimony, he shortly afterward died. It was a breach of the Company's duty for it to turn off the supply of gas in cold weather, without reasonable notice, followed by a neglect or refusal to turn it on again upon being notified and requested to do so. The following is quoted from the opinion of the court: "To say that the failure to give notice to the plaintiff, as it was to the other consumers, who received their supply from the same main, was due to the mistake of one of the Company's servants in supposing that her house was connected with another main, is no answer. It was the Company's duty to know with which main her house was connected. Its mistake was due to its own negligence. A wrongful or malicious intent is not an essential element of the tort complained of. If a man will set about actions attended with risk to others the law casts on him the duty of care and competence." A case strikingly similar to this is Coy *v.* Indianapolis Gas Company, recently decided by the Supreme Court of Indiana.

Recent Patent Issues.

Prepared for the AMERICAN GAS LIGHT JOURNAL by ROYAL E. BURNHAM, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 10 cents.

965,162. Gas Stove. J. S. Dearborn, Lynn, Mass.
965,248. Gas Scrubber. A. Steinbart, Pittsburgh, Pa.
965,463. Gas Stove. T. J. Hughes, Chicago, Ills.
965,665. Safety Gas Valve. S. Strand, New Haven, Conn.
965,841. Gas, Electric and Combination Fixture. L. W. Andersen, Waterbury, Conn., assignor to the Plume & Atwood Manufacturing Company, same place.

THE Public Service Company, of New Jersey, is making many extensions this summer, notable amongst which are lines through the Wallington section of Passaic.

The Koerting Steam-Jet Gas Exhauster.

[Communicated.]

Since the Koerting exhauster has been introduced in this country with some success, a description thereof will probably interest some of your readers.

The action of the Koerting exhauster is based upon the moving power of a steam-jet, which, issuing from a nozzle, traverses a series of corresponding nozzles of larger areas. Thereby, a sufficient suction is created for the gas, which, after being mixed with the jet of steam, has the necessary velocity to overcome the counter pressure. Regulation of suction corresponding to the quantity of gas to be produced is effected by a special, self-acting governor.

Fig. 1.

Figs. 1, 2 and 3 illustrate the exhauster and its application. Fig. 3, *D* shows the drip, *E* the exhauster, *G* the connection to gas main, *H* the discharge, *S* the steam inlet, *T* the governor, *W*, the handwheel for regulating the capacity, and *CF* the combination foot containing a by-pass to the apparatus.

The exhauster may be attached horizontally, vertically or diagonally. In a regularly laid out gas plant

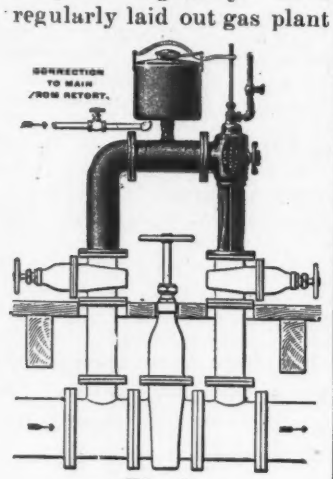

Fig. 2.

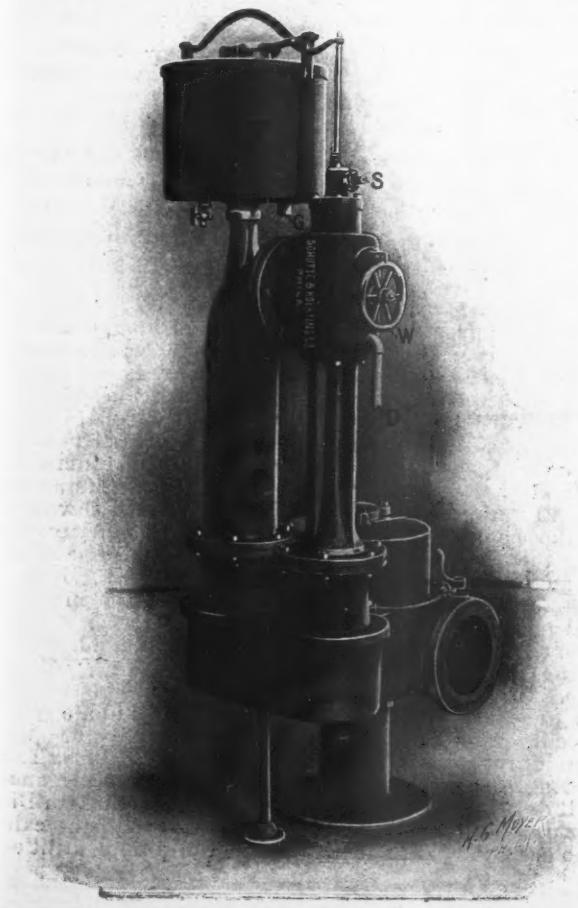

Fig. 3.

it is usually placed on the main, either between that and the condenser, or between the scrubbers and the purifiers. In the latter case the gas should travel a sufficient distance in order to condense the steam before entering the purifiers; otherwise a cooler should be employed. When the exhauster is placed between the condenser and the scrubber, it is of advantage to use a steam scrubber in connection with it, in which the condensed steam, which has served for exhausting the gas, is used for scrubbing. A steam trap should always be fixed on a bend in the steam pipe directly before the latter enters the exhauster, to insure dry steam. Before final connection is made, the steam pipes should be blown out by pressure steam. This is done in order to clean and to clear them thoroughly. The governor should be placed as close to the exhauster as possible. The vacuum pipe under the bell of the governor may be attached to the gas main, anywhere between the retorts and the exhauster.

As mentioned above, the capacity is regulated by means of a handwheel, which permits adjustment to full, ¾, ½ or ¼ capacity. The governor is generally set in such a manner that it keeps the pressure on the retorts at zero; however, by "loading" the governor more or less, the pressure on the retorts may be kept below zero or above, as desired. The makers of this exhauster recommend it on account of the following advantages, and it would seem they have claimed all they could: Increase of gas production per ton of coal, increase of illuminating power, decrease of carbon deposits in retort, low first cost, no moving parts, no motor required for its operation, consumption of steam is always in proportion to the quantity of gas exhausted, automatic regulation of the pressure on the retorts, no clogging or choking of the apparatus.

Items of Interest

FROM VARIOUS LOCALITIES.

AT the coroner's inquest recently convened in Corning, N. Y., to determine the cause of the deaths of T. J. Fleming, Martin Denman and Jno. Bonnice, said deaths having been caused by an explosion in the producer gas machine on the plant, the jury returned the following peculiar verdict: "We find that Fleming, Denman and Bonnice died in producer No. 6, in the Corning Glass Works, Corning, N. Y., between 5:30 and 6 o'clock, P.M., Saturday, July 9th, and that death was caused by gas or gases, the nature of which being unknown to this jury, no blame can be attached to anyone having supervision of the works."

ADVICES from Philadelphia, under date of July 29th, are to the effect that, the morning of the preceding Tuesday it was officially comfirmed that the United Gas Improvement Company had secured control of the Charleston Consolidated Railway and Lighting Company, of Charleston, S. C. A new Company has been formed under the above title, which is controlled by the U. G. I. Company, with a capital stock of $2,000,000, par $50, consisting of $500,000 six per cent. preferred stock and $1,500,000 common. This Company takes over a 99-year lease, the property of the Charleston Consolidated Railway, Gas and Electric Company. This lease guarantees rentals sufficient to pay 6 per cent. dividends on the $500,000 preferred stock, and dividends on the $1,500,000 common stock, as follows: 4 per cent. to July 1, 1911; 5 per cent. to January 1, 1913; and 6 per cent. thereafter; also interest on the outstanding bonds. The proceeds of the issue of $500,000 preferred stock in the new Company will be employed for extensions and betterments, which the old Company found it impossible to make. The U. G. I. Company will be represented in the succeeding Company by Mr. Walton Clark, who will act as Chief Executive officer, with Mr. W. F. Douthirt as Secretary, and Mr. Lewis Lillie as Treasurer. The control dates from July 1st. It is a satisfaction to know that this sterling old property is at last under the dominion of strong hands, which ceased to be the case about 18 years ago.

THE Corporations Commission of South Dakota has issued an order requiring all companies supplying natural gas outside the city limits of Shawnee, Oklahoma City, Guthrie, Muskogee, Tullsa and Edmond, to install meters for measuring all the gas pumped into these cities for consumption there. The order will also require the local Companies to report on the total quantity of gas used in the various cities, thereby enabling the Corporation Commission to determine whether or not more gas is charged for than is pumped into the various cities. The Commission is also seeking to abolish the minimum charge, on the ground that it fixes a discriminatory standard, in contravention of the anti-trust laws of the State.

THE New Haven *Register* says that the New Haven Gas Company is installing about 175 ranges in the town of Cheshire, which was recently hooked-up to the New Haven mains, and that quite a number of houses there are being piped for gas supply. Main laying work

in Cheshire has proven quite a task, much ill-grained rock having been encountered.

A LINE or two from "B. T. S.," writing from Des Moines under date of the 28th ult., says: "The City Treasury was the gainer, when it received from Mr. W. R. Keffer, of the Des Moines Gas Company, a check for 2 per cent. of its gross earnings for the past 6 months. Under the terms of the franchise by which the Company operates, it makes semi annual settlements with the city, each settlement amounting to 2 per cent. of the Company's gross receipts every 6 months. T, is half the sales amounted in gross to $266,213.19, and the royalty check, therefore, represented to $5,324.26."

THE Philadelphia *Inquirer* of the 28th ult., notes that the United Gas Company has increased its output of gas in marked degree for the quarter ended June 30. The gain in the first quarter plus the gain for the second quarter, totalled and averaged 7½ per cent. for the 6 months, as against a gain of 3.04 per cent. for the corresponding half of 1909. All of which is submitted as proof that our friend gas grows in strength and usefulness as it grows in age even when confronted with a lusty youth in the shape of electricity; for no one in the lighting business can truthfully say that the suppliers of electric current in the Quaker City are not up-to-date in every respect.

MR. JOHN COLLINS has been appointed Superintendent of the Brockport (N. Y.) Gas Light Company, vice Mr. W. H. Fritchman. The latter resigned, in order to take up another field of work. Mr. Fritchman's administration at Brockport was in every sense satisfactory to its owners—Messrs. Bush and McBain.

WHILE talking with a gentleman from that city some days ago (he prefers that his name be not mentioned), our visitor declared that the vertical system of retorts, now in use for some months at the plant of the Columbia (Mo.) Company, are giving unequivocal satisfaction.

AT the annual meeting of the Beverly (Mass.) Gas and Electric Company no change was made in the executive management. The figures presented in the annual reports proved the past twelvemonth to have been the banner year in the Company's trading.

THE hearing in the case of the Buffalo (N. Y.) authorities versus the Buffalo Gas Company, set by the up-State division of the Public Service Commission, was continued from July 29th to the 12th inst.

THE Gulf Coast Gas Company, of Biloxi, Miss., proposing to operate a chain of plants along the Gulf Coast, has not been added to the holding of the H. L. Doherty syndicate.

ADVICES from Chicago, under recent date, are to this effect: If the Peoples Gas Company continues to show improvement in earnings at the rate shown for the 5 months ended May 31st, which you will remember was submitted to the New York Stock Exchange, the net earnings for the year will equal $3,430,000, or above 9.8 per cent. on the shares, which, as everyone knows, are receiving a 7 per cent. return. Such net earnings compare with $3,113,103, or 8.89 per cent. in 1909, $2,755,694, or 8.36 per cent. in 1908, or $2,518,782, or 7.64 per cent. in 1907, and $2,291,220, or 5.95 per cent. in 1906. Assuming the improvement continues, and deducting 6 months' interest ($75,000) on the new 3-million, 5 per cent. bonded indebtedness, the year 1910 will compare with 1909 in about this way:

	1910.	Gain.	Per Cent.
Gross	$15,578,287	$1,016,609	6.98
Expenses	9,134,745	630,149	6.47
Balance	6,443,542	386,550	6.4
Dep. and reserve	1,020,797	.....	...
Bond interest	1,984,300	75,000	...
Net earnings	3,438,445	125,341	10.4

The Company's working capital had decreased in 5 months, the May 31 figures comparing with those of December 31, as follows:

	Quick Assets.	Decrease.
Cash on hand	$2,3[illegible]2,204	$1,244,323
Accounts receivable	1,374,066	53,632
Gas bills receivable	889,481	33,083
Bills receivable	52,227	.....
Total current assets	$4,617,978	$1,223,674
Current liabilities:		
Dep. sec. for gas bills	272,502	6,666
Accts. payable	669,204	252,342
Total cur. liabilities	941,706	245,676
Working capital	3,676,272	977,998

"T. V. M.," writing from St. Louis, under date of the 29th ult., says: "The bond issue of $50,000 emitted by the Helena (Ark.) Gas Company, which issue was taken up by the Union Trust Company, of this city, rather goes to show that the gas folks up there have the call on the electric lighting at last. The people of Helena have been slow to determine it, but they are now convincingly satisfied that gas is to electricity as 4 is to 1 - that is, all things considered (but mainly as to expensiveness) gas is cheaper and better, when compared with the electric current, as the figures in our easily understood equation show—gas costs about one-fourth that which the electric service costs, with the use of the former in the kitchen only half considered. The money from the bond issue is to go into a complete new water gas system, and it is arranged that the apparatus will be ready for operation on or before the 15th prox. Helena is growing with rapidity, and the growth averages well the sort which means growth of the solid, lasting type.

THE Scheu-Dexter Manufacturing Company has been organized to do business in Manhattan borough, in the line of manufacturing and dealing in gas appliances of the fixture sort. Its incorporators are: W. C. Scheu, Springfield, Mass.; S. D. Webb, New York; and H. D. Dumont, Brooklyn. It is capitalized in $1,000,000.

HERE are some facts culled from the annual report of the Pittsfield (Mass.) Coal Gas Company, presented the 27th ult. They (the figures) rather go to show that Manager Craft is "on the job" to some useful purpose: Total income from sales of gas, $129,397.68; sales of gas, 111,985,400 cubic feet—an increase of 16.7 per cent.; increase in meters set, 785 - making 5,616 in use; ranges and water heaters in use, 4,022; gas arcs in service, 1,038; total street main mileage, 53; and the average candle power, as shown at the works and office, as given by the State Inspector's tests, was 19.3 candles—the standard is 16. Quite some betterments were made on the plant, and a notable addition to the equipment was a storage holder up to retaining ¾ million cubic feet. The Directors declared a dividend at the rate of 6 per cent., or 1½ for the quarter. The stockholders elected the following Directors: William L. Adam, George H. Tucker, Thos. F. Plunkett, Wm. G. Backus, Jas. W. Hull and R. W. Adam. The Directors named the following officers: President, R. W. Adam; Treasurer, H. A. Dunbar; Superintendent, H. C. Craft.

THE municipal light plant at Wakefield, Mass., is about to make some extensions to the service, particularly in respect of the main system.

HASTINGS, NEB., is considering once more the advisability of engaging the municipality in the maintenance of a gas plant. The electric lighting plant has been so operated in Hastings for a number of years.

AT the annual meeting of the Fall River (Mass.) Gas Works Company the officers elected were: Directors, E. S. Webster, A. D. Foster, G. C. Lee, C. M. Lane, Philip Dexter, Chas. F. Prichard and Russell Roff; President, Russell Roff; Vice President, F. P. Roger; Clerk, Clement R. Ford; Treasurer, H. H. Sawyer; Assistant Treasurer, Sidney E. Baker; Manager, Joseph E. Nute.

THE authorities of San Diego, Cal., are considering a proposition involving the construction, for operation on public account, of a gas and electric lighting plant. The expenditure (estimated) necessary is put at $1,500,000, which sum would likely be quite 2 millions when the "plants" were completed. That the scheme does not sound well to the labor element of the city would seem to be borne out from the following statement recently made by one W. T. Patterson, who is prominent in the local Electrical Workers' Union, made, in responce to a query from the San Diego "Union" as to how the "Workers' Union" stood on the question: Editor "Labor Leader": As a member of the Electrical Workers' Union I have something to say about the proposed bonds for $1,500,000 with which to build a city lighting plant. While I do not pretend to know all that some wise guys think that they know about the financial side of municipal ownership, I do know a whole lot about the labor side of the question. And what I know about it makes me determined to vote and work against those bonds. The San Diego gas people pay union wages all along the line, and their men are required to come through with only one qualification—honest and intelligent work. Now, we union men all know that a fellow has to vote right and he must have a good political pull to get a job of any sort under the city departments. And, of course, many an incompetent man is holding down a fat job with the city just because he proved a valuable "worker" at election time. Furthermore, no city can legally enforce the closed shop principle. The taxpayers and voters would repudiate any attempt to enforce it, on the ground that the city work must be open to all citizens without regard to union or non-union distinctions. This is not the best of English or the best of diction, and it lacks "elegance;" however, it will do, for it shows where labor stands on the San Diego public lighting proposition, and bears good testimony to the caliber of the men who are taking care of that end of the public utilities in San Diego.

The Market for Gas Securities.

Consolidated "bobbed" in a very circumscribed range last week, somewhere between 125¾ and 128¼. To day (Friday) at noon it was 127 to 127¼, with very little doing in it. The situation in respect of these shares remains unchanged. There is every reason for believing them to be worth intrinsically $250, but the Exchange folks can only see about one-half that value. The Company's physical condition is almost perfect, and its trading increases in wonderful degree.

Brooklyn Union is 127 to 130, and it might be here said that its main system is beginning to show the virtues of the plan of renewing and extending it devised 3 years ago by its capable engineer, Mr. J. H. Jourdan, whose attention to the Company's affairs is never misdivided. In out-of-town shares the feature is Massachusetts common, which crossed the 80 mark last week.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

AUGUST 8.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$73,177,000	100	127	127¼
Central Union Gas Co.— 1st 5's, due 1972, J. & J.	3,000,000	1,000	98	101
Equitable Gas Light Co.— Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	3,500,000	100	155	165
New Amsterdam Gas Co.— 1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	35	50
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98½	100½
New York and East River— 1st 5's, due 1944, J. & J.	3,500,000	1,000	104	107
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union— 1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	—	75
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	130¼	131
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	299,650	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	⅛	⅝
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	500,000	1,000	90	96
Boston United Gas Co.— 1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	73	73½
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,660,000	1,000	104	106¼
Cincinnati Gas and Electric Co.	29,500,000	100	92	93
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	90½	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	103½	—
Mortgages, 6's	3,600,000		89	100
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	458,000	—	102	105
Detroit City Gas Co	5,000,000	50	—	50
" Prior Lien 5's	4,619,000	1,000	97	100½
Detroit Gas Co., 5's	381,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	112	113½
" Bonds, 5's	10,500,000	—	103	103¾
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	200,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis.	10,000,000	100	96	96¼
Preferred	2,500,000	100	90	100
Bonds	10,000,000	1,000	102½	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,370,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	350,000	1,000	106	108¾
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies, of Boston	25,000,000	100	80	80¼
Preferred	25,000,000	100	91½	91¾
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	105	105
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.— 1st Mtg. 5's	751,000	1,000	100	102
Washington (D. C.) Gas Co.	1,600,000	200	375	380
1st Mortgage, 6's	600,000	—	—	—

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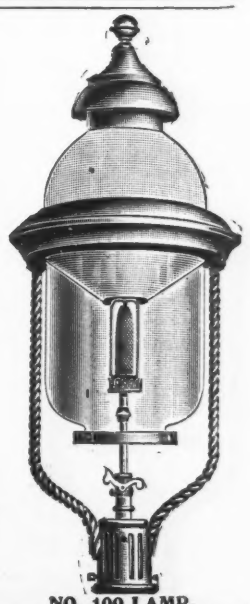

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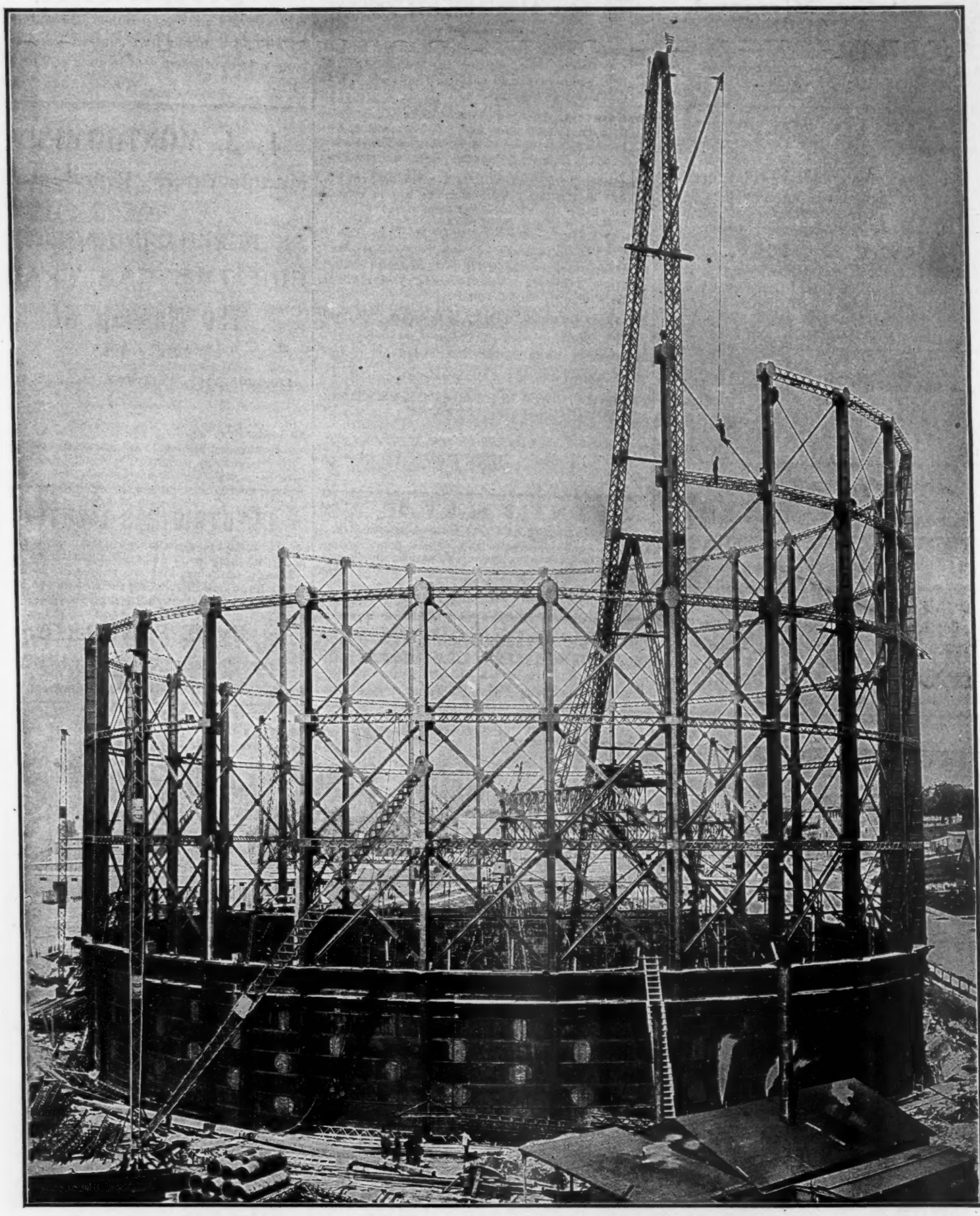

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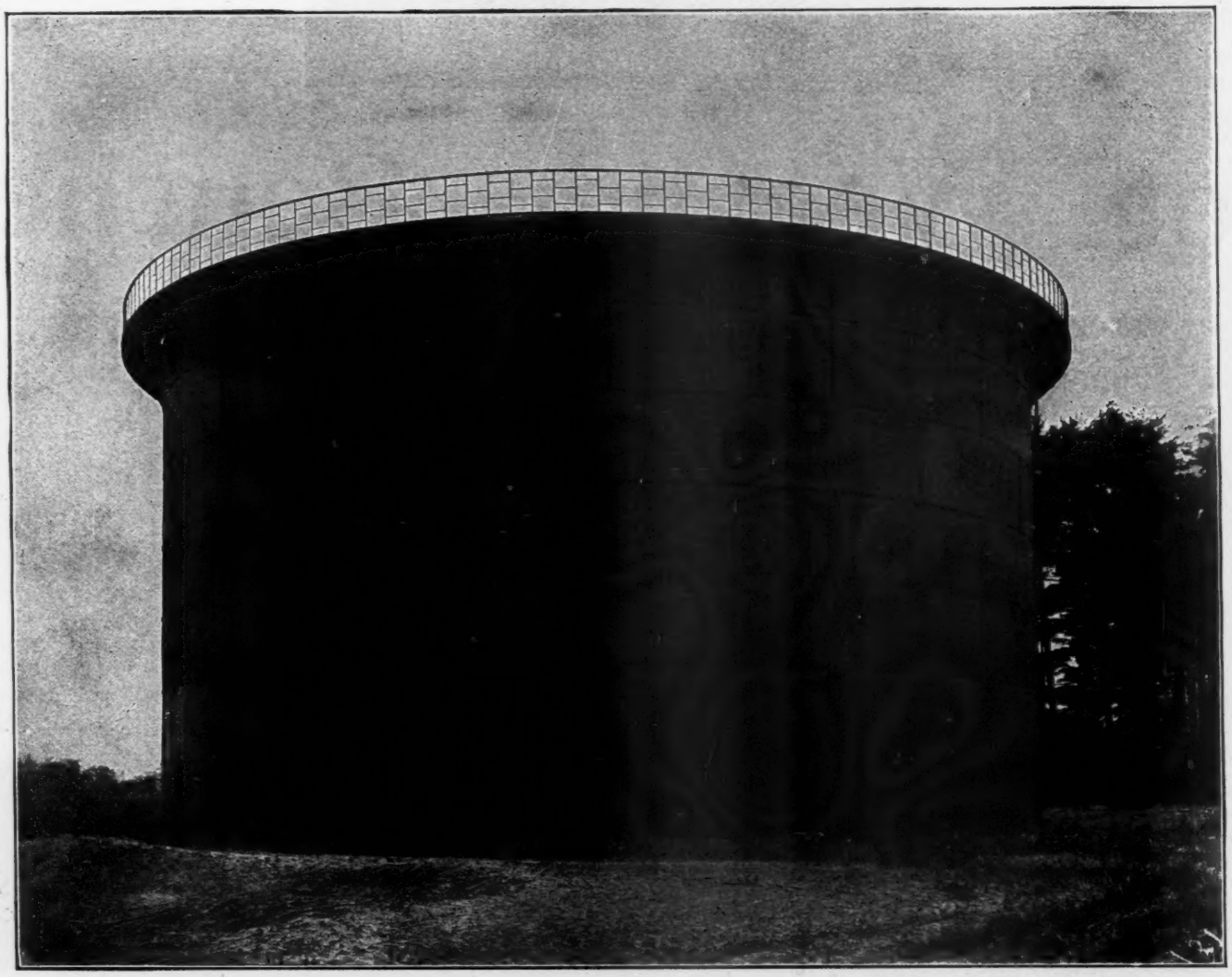

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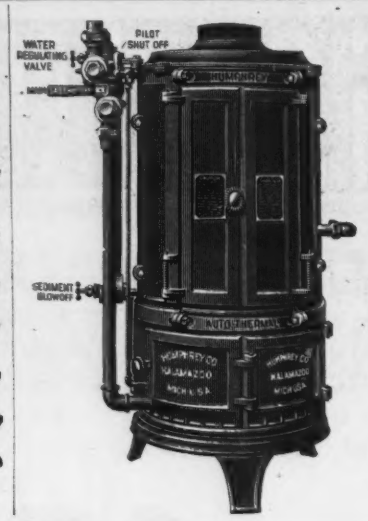

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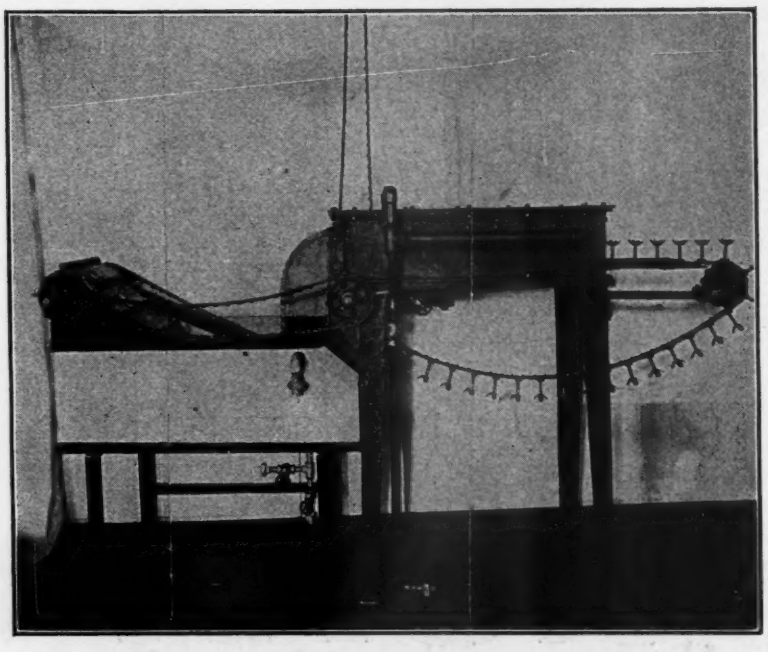

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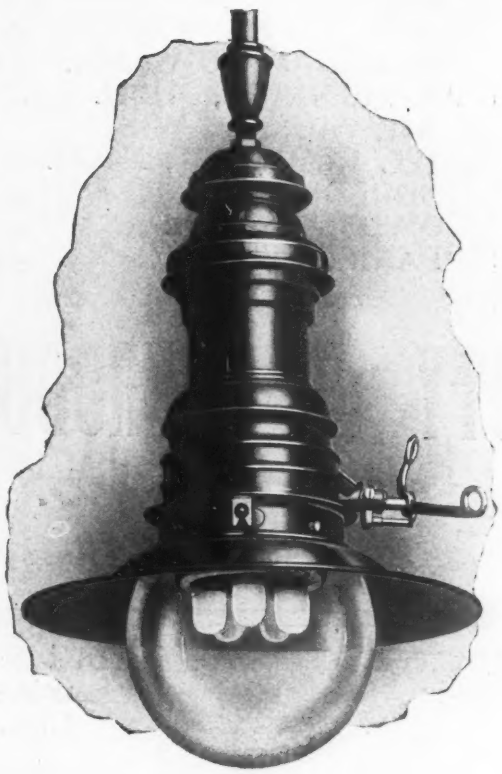

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CRESTON, IA.
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DAYTON, O.
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DETROIT, MICH.
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HUNTSVILLE, ALA.
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LOCKPORT, N. Y.
MARINETTE, WIS.
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MILWAUKEE, WIS.
MT. PLEASANT, MICH.
NORFOLK, VA.
OWOSSO, MICH.
PARIS, KY.
PEKIN, ILLS.
RICH HILL, MO.
RICHMOND, IND.
ROCKFORD, ILLS.
SALT LAKE CITY, UTAH.
SOUTH HAVEN, MICH.
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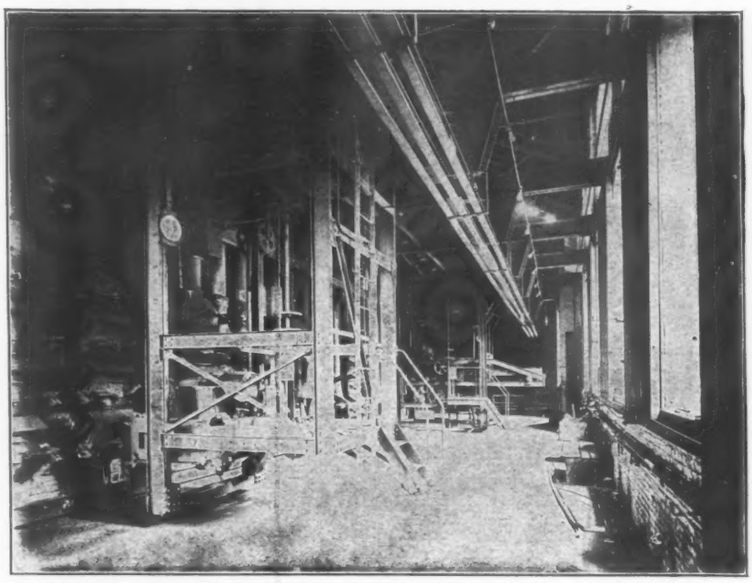

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MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, October, 1910. New York City. Officers: President, Wm. H. Bradley, N. Y., City Secretary, A. B. Beadle, 29 West 39th street, N. Y. City.

Canadian Gas Association.—Annual meeting, June, 1911. ————————. Officers President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, Nov., 1910. New York City. Officers: President, C. R. Huntley, Buffalo, N, Y.; Secretary, C. H. B. Chapin, 29 W. 39th street. New York City.

Guild of Gas Managers of New England.—Annual meeting, December. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, A. K. Quinn; Newport, R. I.; Secretary, Walter G. Africa, Manchester, N. H.

Illinois Gas Association.—Annual meeting, time, March, Chicago, Ills. Officers: President, A. S. Harrington, Chicago, Ill.; Secretary-Treasurer, C. B. Strohn, Elgin, Ill.

Illuminating Engineering Society.—Annual meeting, Baltimore, Md., Oct. 1911. Meetings of Sections, monthly. President, W. H. Gartley, Philadelphia, Pa.; Secretary, Preston S Millar, 29 W. 39th street, N. Y. City. Sections: New York: Secretary, Albert J. Marshall, 227 Fulton street. New England, Secretary, L. D. Gibbs 39 Boylston street, Boston, Mass. Philadelphia, Secretary, F. N. Morton, Broad and Arch streets Chicago, Secretary, T. R. Beebe, 157 Michigan avenue,

Indiana Gas Association.—Annual meeting, January 19, 1911, Fort Wayne, Ind. Officers: President, Carl H. Graf, Indianapolis; Vice-President, S. E. Mulholland; Secretary-Treasurer, Philmer Eves, Indianapolis Gas Company, Indianapolis, Ind.

Iowa District Gas Association.—Annual meeting, time, June, 1911, ————————. Officers: President, Austin Burt, Waterloo, Ia.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, time, ———— Wichita, Kas. Officers: President, W. A. Scothorn, Hutchinson, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association—Annual meeting, time, Sept. 9 to 12, 1910; Aboard Boat, "Georgian Bay." Officers: President, B. O. Tippy, Grand Rapids, Mich.; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April 13, 14 and 15, 1911; St. Louis, Mo. Officers: President, R. J. Irvine; Secretary and Treasurer, W. J. Cunningham, Springfield, Mo.

National Commercial Gas Association.—Annual meeting, December, 1911: Boston. Officers: President, E. N. Wrightington, Boston; Secretary, Louis Stotz, 36 West 39th street, New York City.

Natural Gas Association.—Annual meeting, May 16, 17 and 18, 1911; Pittsburgh, Pa. Officers: President, John M. Garard, Columbus, O, Secretary, T. C. Jones, Delaware, O. Editor Wrinkle Department, F. W. Stone, Ashtabula, O.

New England Gas Association.—Annual meeting, third Wednesday in February; Boston. Officers: President, W. H. Snow, Holyoke, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

Oklahoma Public Utilities Association.—Annual meeting, May 9, 10 and 11, 1911. Officers: President, E. C. Reynolds; Secretary, Galen Crow, Guthrie, Okla.

Pacific Coast Gas Association.—Annual meeting, Sept. 20, 21 and 22, 1910, Los Angeles, Cal. Officers: President, W. B. Cline, Los Angeles, Cal.; Secretary-Treasurer, John A. Britton, 925 Franklin street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, April, 1911, Reading, Pa. Officers: President, J. H. Keppelman, Reading, Pa.; Secretary-Treasurer, William H. Merritt, Lebanon, Pa.

Society of Gas Lighting.—Annual meeting, December, 1910; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 1123 Broadway, New York.

Southern Gas Association.—Annual meeting, Feb. 16, 1911, Montgomery, Ala. Officers: President, H. W. Frund, Salisbury, N. C.; Secretary-Treasurer, Jas. Ferrier, Rome, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. May, 1911, ———— Tex. Officers: President, W. B. Tuttle, San Antonio, Tex.; Secretary, H. B. Head, Stephensville, Tex.

Wisconsin Gas Association.—Annual meeting, May ————, 1911, Milwaukee, Wis. Officers: President, W. H. Winslow, Superior, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.

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With kind regards,
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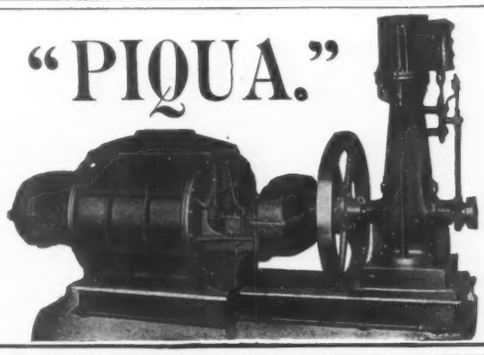

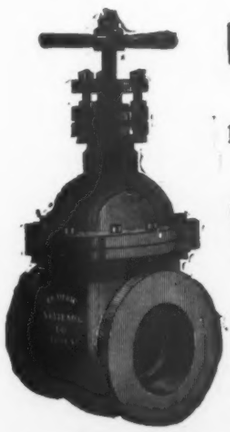

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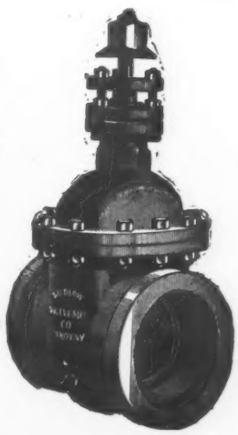

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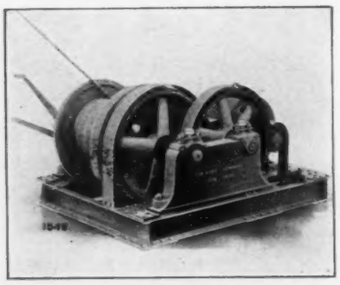

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PUBLIC LIGHTING TABLES FOR AUGUST, 1910.

[COMMUNICATED BY THE AMERICAN METER COMPANY.]

Day of Week.	Table No. 1. FOLLOWING THE MOON. Date.	Light.	Extinguish.	Day of Week.	Table No. 2. NEW YORK CITY. ALL NIGHT LIGHTING. Date.	Complete Lighting in 1 Hour.	Complete Extinguishing in 50 Minutes.
						From Time Given.	
		P.M.				P.M.	A.M.
Mon.	1	7.40	4.00 A.M.	Mon.	1	7.02	3.27
Tue.	2	7.40	4.00	Tue.	2	7.02	3.27
Wed.	3	7.40	4.00	Wed.	3	7.02	3.27
Thu.	4	7.40 N.M.	4.00	Thu.	4	7.02	3.27
Fri.	5	7.40	4.00	Fri.	5	7.02	3.27
Sat.	6	7.40	4.00	Sat.	6	6.57	3.37
Sun.	7	7.40	4.10	Sun.	7	6.57	3.37
Mon.	8	7.40	4.10	Mon.	8	6.57	3.37
Tue.	9	7.40	4.10	Tue.	9	6.57	3.37
Wed.	10	8.00	4.10	Wed.	10	6.57	3.37
Thu.	11	9.20	4.10	Thu.	11	6.57	3.37
Fri.	12	9.50 F.Q.	4.10	Fri.	12	6.57	3.37
Sat.	13	9.20	4.10	Sat.	13	6.47	3.47
Sun.	14	10.50	4.10	Sun.	14	6.47	3.47
Mon.	15	10.30	4.10	Mon.	15	6.47	3.47
		A.M.					
Tue.	16	12.30	4.10	Tue.	16	6.47	3.47
Wed.	17	1.30	4.10	Wed.	17	6.47	3.47
Thu.	18	2.30	4.10	Thu.	18	6.47	3.47
Fri.	19	No L.	No L.	Fri.	19	6.47	3.47
Sat.	20	No L. F.M.	No L.	Sat.	20	6.37	3.52
Sun.	21	No L.	No L.	Sun.	21	6.37	3.52
Mon.	22	7.20 P.M.	9.10 P.M.	Mon.	22	6.37	3.52
Tue.	23	7.20	9.40	Tue.	23	6.37	3.52
Wed.	24	7.20	10.10	Wed.	24	6.37	3.52
Thu.	25	7.20	10.30	Thu.	25	6.37	3.52
Fri.	26	7.20	11.10	Fri.	26	6.37	3.52
Sat.	27	7.20 L.Q.	11.50	Sat.	27	6.27	3.57
Sun.	28	7.10	12.40 A.M.	Sun.	28	6.27	3.57
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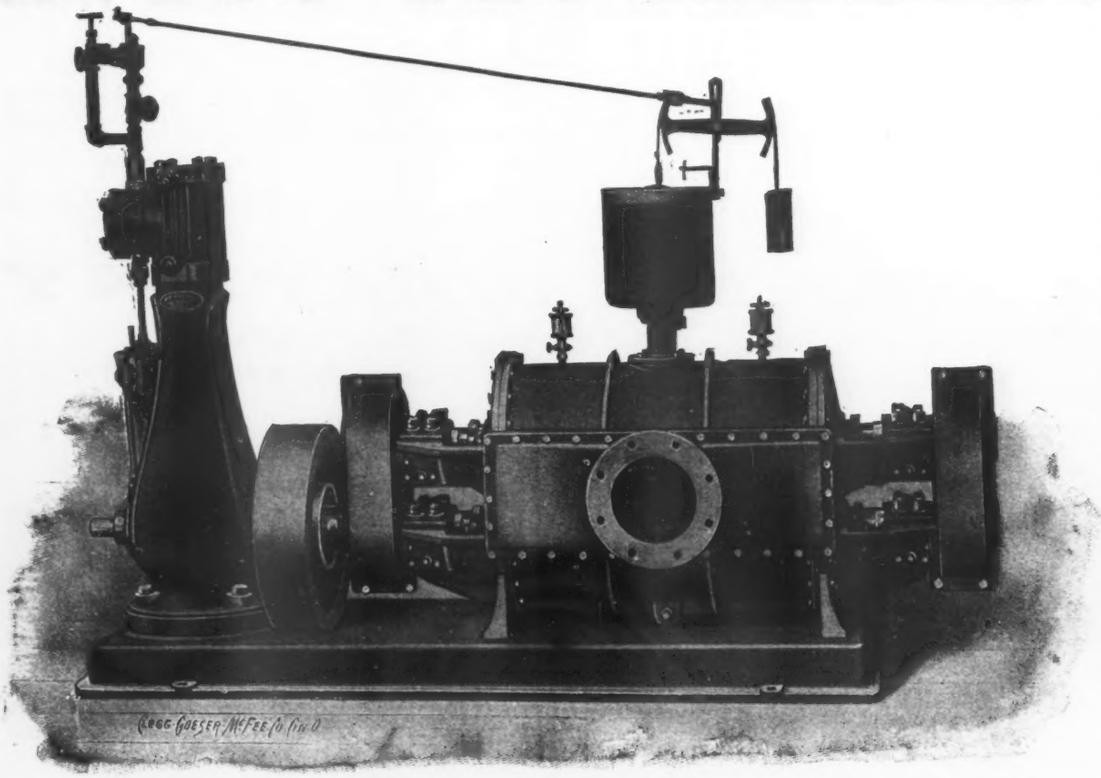

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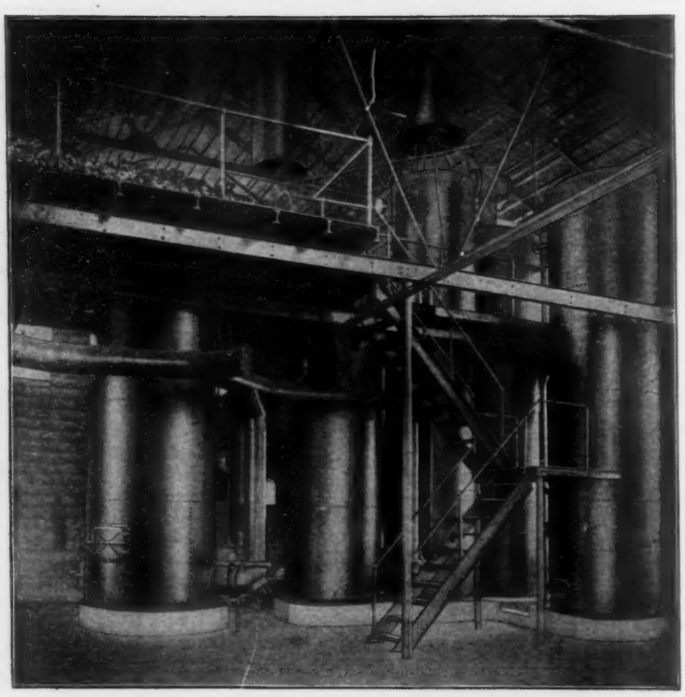

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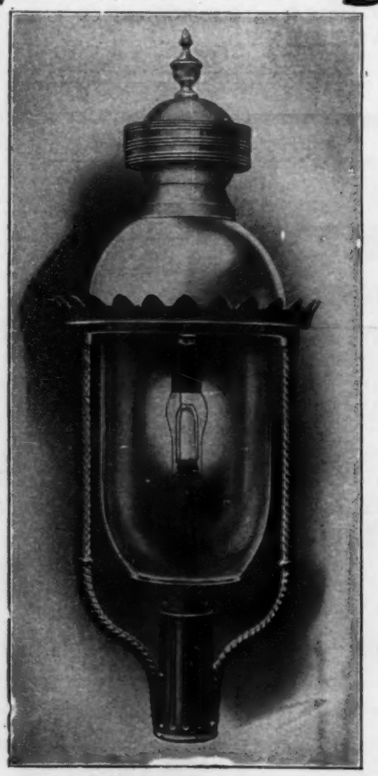

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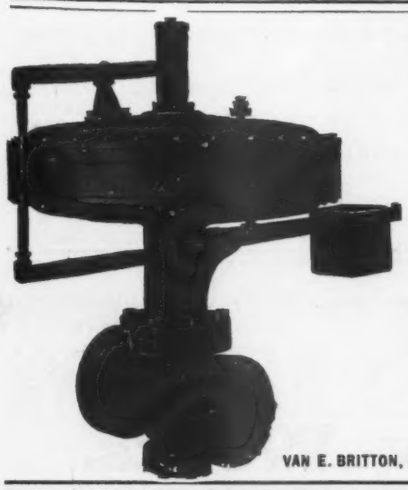

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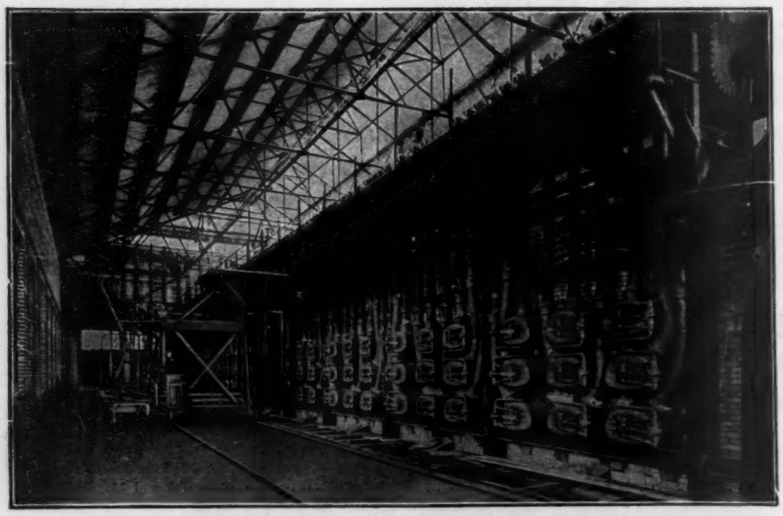

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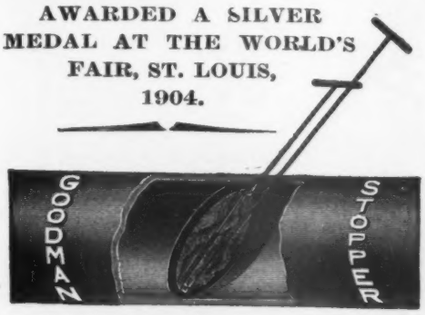

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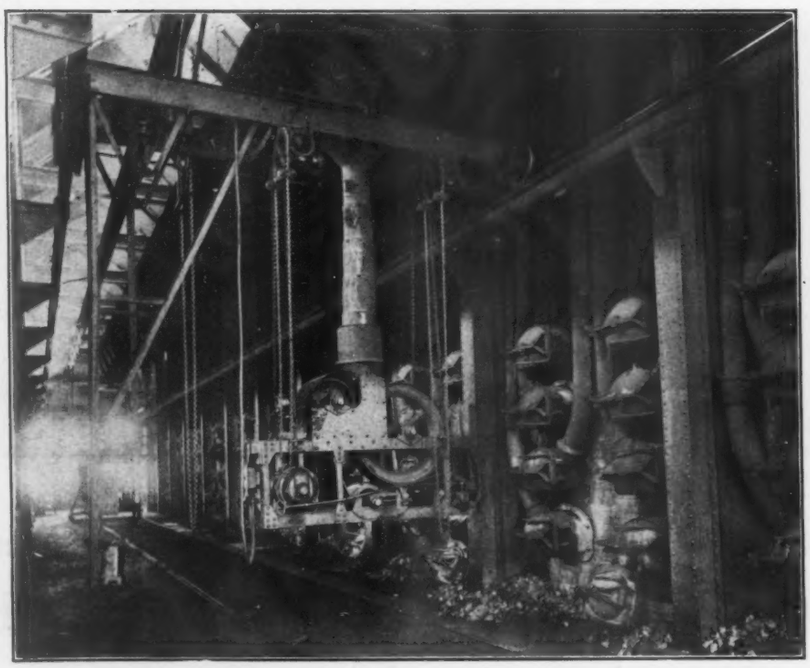

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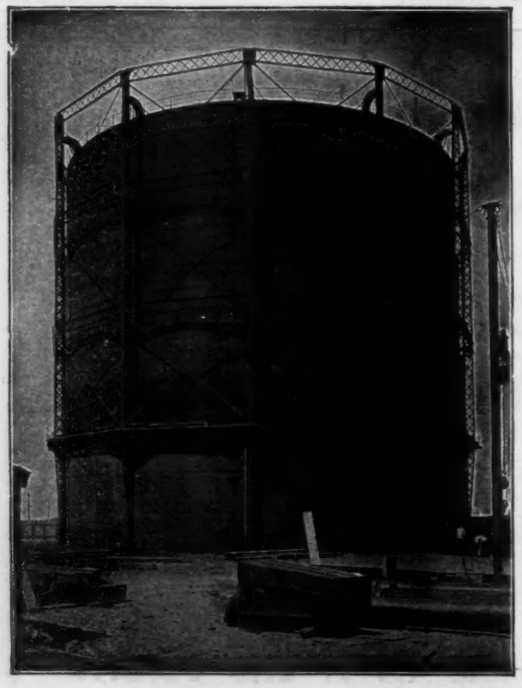

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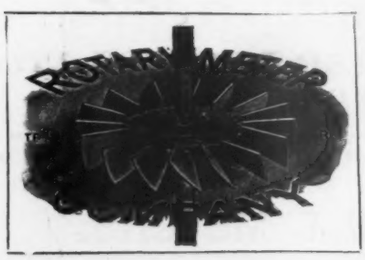

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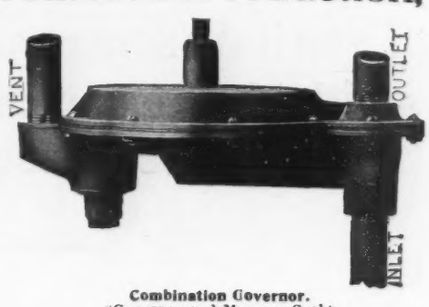

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